FIG. 1

```
   1 catcatcaat aatatacctt atagatggaa tggtgccaat atgtaaatga ggtgatttta
  61 aaaagtgtgg gccgtgtggt gattggctgt ggggttaacg gttaaaaggg gcggcgcggc
 121 cgtgggaaaa tgacgtttta tggggtggga gtttttttgc aagttgtcgc gggaaatgtt
 181 acgcataaaa aggcttcttt tctcacggaa ctacttagtt ttcccacggt atttaacagg
 241 aaatgaggta gttttgaccg gatgcaagtg aaaattgctg attttcgcgc gaaaactgaa
 301 tgaggaagtg ttttttctgaa taatgtggta tttatggcag ggtggagtat ttgttcaggg
 361 ccaggtagac tttgacccat tacgtggagg tttcgattac cgtgtttttt acctgaattt
 421 ccgcgtaccg tgtcaaagtc ttctgttttt acgtaggtgt cagctgatcg ctaggtatt
 481 tatacctcag ggtttgtgtc aagaggccac tcttgagtgc cagcgagaag agttttctcc
 541 tctgcgccgg cagtttaata ataaaaaat gagagatttg cgatttctgc ctcaggaaat
 601 aatctctgct gagactggaa atgaaatatt ggagcttgtg gtgcacgccc tgatgggaga
 661 cgatccggag ccacctgtgc agcttttga gcctcctacg cttcaggaac tgtatgattt
 721 agaggtagag ggatcggagg attctaatga ggaagctgtg aatggctttt ttaccgattc
 781 tatgctttta gctgctaatg aaggattaga attagatccg cctttggaca ctttcaatac
 841 tccaggggtg attgtggaaa gcggtacagg tgtaagaaaa ttacctgatt tgagttccgt
 901 ggactgtgat ttgcactgct atgaagacgg gtttcctccg agtgatgagg aggaccatga
 961 aaaggagcag tccatgcaga ctgcagcggg tgagggagtg aaggctgcca atgttggttt
1021 tcagttggat tgcccggagc ttctggacat ggctgtaagt cttgtgaatt tcacaggaaa
1081 aatactggag taaaggaact gttatgttcg ctttgttat atgaaaaccc actgccactt
1141 tatttacagt aaagtgtgtt taagttaaaa tttaaaggaa tatgctgttt ttcacatgta
1201 tattgagtgt gagtttttgtg cttcttatta taagtcctgt gtctgatgct gatgaatcac
1261 catctcctga ttctactacc tcacctcctg atattcaagc acctgttcct gtggacgtgc
1321 gcaagcccat tcctgtgaag cttaagcctg ggaaacgtcc agcagtggag aaacttgagg
1381 acttgttaca gggtgggggac ggacctttgg acttgagtac acggaaacgt ccaagacaat
1441 aagtgttcca tatccgtgtt tactaaggt gacgtcaata tttgtgtgag agtgcaatgt
1501 aataaaaata tgttaactgt tcactggttt ttattgcttt ttgggcgggg actcaggtat
1561 ataagtagaa gcagacctgt gtggttagct cataggagct ggctttcatc catggaggtt
1621 tgggccattt tggaagacct taggaagact aggcaactgt tagagagcgc ttcggacgga
1681 gtctccggtt tttggagatt ctggttcgct agtgaattag ctagggtagt ttttaggata
1741 aaacaggact ataaacaaga atttgaaaag ttgttggtag attgcccagg acttttgaa
1801 gctcttaatt tgggccatca ggttcacttt aaagaaaaag tttttatcagt tttagactt
1861 tcaaccccag gtagaactgc tgctgctgtg gctttttctta cttttatatt agataaatgg
1921 atcccgcaga ctcatttcag caggggatac gttttggatt tcatagccac agcattgtgg
1981 agaacatgga aggttcgcaa gatgaggaca atcttaggtt actggccagt gcagcctttg
2041 ggtgtagcgg gaatcctgag gcatccaccg gtcatgccag cggttctgga ggaggaacag
2101 caagaggaca acccgagagc cggcctggac cctccagtgg aggaggcgga gtagctgact
2161 tgtctcctga actgcaacgg gtgcttactg gatctacgtc cactggacgg gatagggcg
2221 ttaagaggga gaggggcatcc agtggtactg atgctagatc tgagttggct ttaagtttaa
2281 tgagtcgcag acgtcctgaa accatttggt ggcatgaggt tcagaaagag ggaagggatg
2341 aagtttctgt attgcaggag aaatattcac tggaacaggt gaaaacatgt tggttggagc
2401 cagaggatga ttgggaggtg gccattaaaa attatgccaa gatagctttg aggcctgata
2461 aacagtataa gatcagtaga cggattaata tccggaatgc ttgttacata tctggaaatg
2521 gggctgaggt ggtaatagat actcaagaca agacagttat tagatgctgc atgatggata
2581 tgtggcctgg agtagtcggt atggaagcag tcacttttgt aaatgttaag tttaggggag
2641 atggttataa tggaatagtg tttatggcca ataccaaact tatattgcat ggttgtagct
2701 ttttggtt caacaatacc tgtgtagatg cctggggaca ggttagtgta cgggggtgta
2761 gtttctatgc gtgttggatt gccacagctg gcagaaccaa gagtcaattg tctctgaaga
2821 aatgcatatt ccaaagatgt aacctgggca ttctgaatga aggcgaagca agggtccgtc
2881 actgcgcttc tacagatact ggatgttta ttttaattaa gggaaatgcc agcgtaaagc
2941 ataacatgat ttgtggtgct tccgatgaga ggccttatca aatgctcact tgtgctggtg
3001 ggcattgtaa tatgctggct actgtgcata ttgtttccca tcaacgcaaa aaatggcctg
3061 ttttgatca caatgtgttg accaagtgca ccatgcatgc aggtgggcgt agaggaatgt
3121 ttatgcctta ccagtgtaac atgaatcatg tgaaagtgtt gttggaacca gatgcctttt
3181 ccagaatgag cctaacagga atctttgaca tgaacacgca aatctggaag atcctgaggt
3241 atgatgatac gagatcgagg gtgcgcgcat gcgaatgcgg aggcaagcat gccaggttcc
3301 agccggtgtg tgtagatgtg accgaagatc tcagaccgga tcatttggtt attgcccgca
3361 ctggagcaga gttcggatcc agtggagaag aaactgacta aggtgagtat tgggaaaact
3421 ttggggtggg attttcagat ggacagattg agtaaaaatt tgtttttct gtcttgcagc
3481 tgacatgagt ggaaatgctt ctttttaaggg gggagtcttc agcccttatc tgacagggcg
3541 tctcccatcc tgggcaggag ttcgtcagaa tgttatggga tctactgtgg atggaagacc
3601 cgttcaaccc gccaattctt caacgctgac ctatgctact ttaagttctt caccttttgga
3661 cgcagctgca gccgctgccg ccgcctctgt cgccgctaac actgtgcttg gaatgggtta
3721 ctatggaagc atcgtggcta attccacttc ctctaataac ccttctacac tgactcagga
```

FIG. 2A-1

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3781 caagttactt gtccttttgg cccagctgga ggctttgacc caacgtctgg gtgaactttc
3841 tcagcaggtg gccgagttgc gagtacaaac tgagtctgct gtcggcacgg caaagtctaa
3901 ataaaaaaaa ttccagaatc aatgaataaa taaacgagct tgttgttgat ttaaaatcaa
3961 gtgtttttat ttcattttc gcgcacggta tgccctggac caccgatctc gatcattgag
4021 aactcggtgg attttttcca gaatcctata gaggtgggat tgaatgttta gatacatggg
4081 cattaggccg tctttggggt ggagatagct ccattgaagg gattcatgct ccggggtagt
4141 gttgtaaatc acccagtcat aacaaggtcg cagtgcatgg tgttgcacaa tatctttag
4201 aagtaggctg attgccacag ataagccctt ggtgtaggtg tttacaaacc ggttgagctg
4261 ggaggggtgc attcgaggtg aaattatgtg cattttggat tggattttta agttggcaat
4321 attgccgcca agatcccgtc ttgggttcat gttatgaagg actaccaaga cggtgtatcc
4381 ggtacattta ggaaatttat cgtgcagctt ggatggaaaa gcgtggaaaa atttggagac
4441 acccttgtgt cctccgagat tttccatgca ctcatccatg ataatagcaa tggggccgtg
4501 ggcagcggcg cgggcaaaca cgttccgtgg gtctgacaca tcatagttat gttcctgagt
4561 taaatcatca taagccattt taatgaattt ggggcggagc gtaccagatt ggggtatgaa
4621 tgttccttcg ggccccggag catagttccc ctcacagatt tgcatttccc aagctttcag
4681 ttctgagggt ggaatcatgt ccacctgggg ggctatgaag aacaccgttt cggggcgggg
4741 ggtgattagt tgggatgata gcaagtttct gagcaattga gatttgccac atccggtggg
4801 gccataaata attccgatta caggttgcag gtggtagttt agggaacggc aactgccgtc
4861 ttctcgaagc aaggggggcca cctcgttcat catttccctt acatgcatat tttcccgcac
4921 caaatccatt aggaggcgct ctcctcctag tgatagaagt tcttgtagtg aggaaaagtt
4981 tttcagcggt tttagaccgt cagccatggg cattttggaa agagtttgct gcaaaagttc
5041 tagtctgttc cacagttcag tgatgtgttc tatggcatct cgatccagca gacctcctcg
5101 tttcgcgggt ttggacggct cctggagtag ggtatgagac gatgggcgtc cagcgctgcc
5161 agggttcggt ccttccaggg tctcagtgtt cgagtcaggg ttgtttccgt cacagtgaag
5221 gggtgtgcgc ctgcttgggc gcttgccagg gtgcgcttca gactcattct gctggtggag
5281 aacttctgtc gcttggcgcc ctgtatgtcg gccaagtagc agtttaccat gagttcgtag
5341 ttgagcgcct cggctgcgtg gcctttggcg cggagcttac ctttggaagt tttcttgcat
5401 accgggcagt ataggcattt cagcgcatac agcttgggcg caaggaaaat ggattctggg
5461 gagtatgcat ccgcgccgca ggaggcgcaa acagtttcac attccaccag ccaggttaaa
5521 tccggttcat tggggtcaaa aacaagtttt ccgccatatt tttttgatgcg tttcttacct
5581 ttggtctcca taagttcgtg tcctcgttga gtgacaaaca ggctgtccgt atctccgtag
5641 actgatttta caggcctctt ctccagtgga gtgcctcggt cttcttcgta caggaactct
5701 gaccactctg atacaaaggc gcgcgtccag gccagcacaa aggaggctat gtgggagggg
5761 tagcgatcgt tgtcaaccag ggggtccacc ttttccaaag tatgcaaaca catgtcaccc
5821 tcttcaacat ccaggaatgt gattggcttg taggtgtatt tcacgtgacc tggggtcccc
5881 gctgggggggg tataaaaggg ggcggttctt tgctcttcct cactgtcttc cggatcgctg
5941 tccaggaacg tcagctgttg gggtaggtat tccctctcga aggcgggcat gacctctgca
6001 ctcaggttgt cagtttctaa gaacgaggag gatttgatat tgacagtgcc ggttgagatg
6061 cctttcatga ggtttcgtc catttggtca gaaaacacaa ttttttttatt gtcaagtttg
6121 gtggcaaatg atccatacag ggcgttggat aaaagtttgg caatggatcg catggtttgg
6181 ttctttttcct tgtccgcgcg ctctttggcg gcgatgttga gttggacata ctcgcgtgcc
6241 aggcacttcc attcggggaa gatagttgtt aattcatctg gcacgattct cacttgccac
6301 cctcgattat gcaaggtaat taaatccaca ctggtggcca cctcgcctcg aagggggttca
6361 ttggtccaac agagcctacc tcctttccta gaacagaaag ggggaagtgg gtctagcata
6421 agttcatcgg gagggtctgc atccatggta aagattcccg gaagtaaatc cttatcaaaa
6481 tagctgatgg gagtgggggtc atctaaggcc atttgccatt ctcgagctgc cagtgcgcgc
6541 tcatatgggt taagggact gccccagggc atgggatggg tgagagcaga ggcatacatg
6601 ccacagatgt catagacgta gatgggggatcc tcaaagatgc ctatgctaggt tggatagcat
6661 cgccccccctc tgatacttgc tcgcacatag tcatatagtt catgtgatgg cgctagcagc
6721 cccggaccca agttggtgcg attgggtttt tctgttctgt agacgatctg gcgaaagatg
6781 gcgtgagaat tggaagagat ggtggggtctt tgaaaaatgt tgaaatgggc atgaggtaga
6841 cctacagagt ctctgacaaa gtgggcataa gattcttgaa gcttggttac cagttcggcg
6901 gtgacaagta cgtctagggc gcagtagtca agtgtttctt gaatgatgtc ataacctggt
6961 tggttttttct tttcccacag ttcgcggttg agaaggtatt cttcgcgatc cttccagtac
7021 tcttctagcg gaaacccgtc tttgtctgca cggtaagatc ctagcatgta gaactgatta
7081 actgccttgt aagggcagca gcccttctct acggggtagag agtatgcttg agcagctttt
7141 cgtagcgaag cgtgagtaag ggcaaaggtg tctctgacca tgactttgag aaattggtat
7201 ttgaagtcca tgtcgtcaca ggctccctgt tcccagagtt ggaagtctac ccgtttcttg
7261 taggcggggt tgggcaaagc gaaagtaaca tcattgaaga gaatcttacc ggctctgggc
7321 ataaaattgc gagtgatgcg gaaaggctgt ggtacttccg ctcgattgtt gatcacctgg
7381 gcagctagga cgatttcgtc gaaaccgttg atgttgtgtc ctacgatgta taattctatg
7441 aaacgcggcg tgcctctgac gtgaggtagc ttactgagct catcaaaggt taggtctgtg
7501 gggtcagata aggcgtagtg ttcgagagcc cattcgtgca ggtgaggatt tgcatgtagg
```

FIG. 2A-2

```
 7561 aatgatgacc aaagatctac cgccagtgct gtttgtaact ggtcccgata ctgacgaaaa
 7621 tgccggccaa ttgccatttt ttctggagtg acacagtaga aggttctggg gtcttgttgc
 7681 catcgatccc acttgagttt aatggctaga.tcgtgggcca tgttgacgag acgctcttct
 7741 cctgagagtt tcatgaccag catgaaagga actagttgtt tgccaaagga tcccatccag
 7801 gtgtaagttt ccacatcgta ggtcaggaag agtctttctg tgcgaggatg agagccgatc
 7861 gggaagaact ggatttcctg ccaccagttg gaggattggc tgttgatgtg atggaagtag
 7921 aagtttctgc ggcgcgccga gcattcgtgt ttgtgcttgt acagacggcc gcagtagtcg
 7981 cagcgttgca cgggttgtat ctcgtgaatg agctgtacct ggcttccctt gacgagaaat
 8041 ttcagtggga agccgaggcc tggcgattgt atctcgtgct cttctatatt cgctgtatcg
 8101 gcctgttcat cttctgtttc gatggtggtc atgctgacga gccccgcggg gaggcaagtc
 8161 cagacctcgg cgcgggaggg gcggagctga aggacgagag cgcgcaggct ggagctgtcc
 8221 agagtcctga gacgctgcgg actcaggtta gtaggtaggg acagaagatt aacttgcatg
 8281 atcttttcca gggcgtgcgg gaggttcaga tggtacttga tttccacagg ttcgtttgta
 8341 gagacgtcaa tggcttgcag ggttccgtgt cctttgggcg ccactaccgt acctttgttt
 8401 tttctttttga tcggtggtgg ctctcttgct tcttgcatgc tcagaagcgg tgacggggac
 8461 gcgcgccggg cggcagcggt tgttccggac ccgggggcat ggctggtagt ggcacgtcgg
 8521 cgccgcgcac gggcaggttc tggtattgcg ctctgagaag acttgcgtgc gccaccacgc
 8581 gtcgattgac gtcttgtatc tgacgtctct gggtgaaagc taccggcccc gtgagcttga
 8641 acctgaaaga gagttcaaca gaatcaattt cggtatcgtt aacggcagct tgtctcagta
 8701 tttcttgtac gtcaccagag ttgtcctggt aggcgatctc cgccatgaac tgctcgattt
 8761 cttcctcctg aagatctccg cgacccgctc tttcgacggt ggccgcgagg tcattggaga
 8821 tacggcccat gagttgggag aatgcattca tgccccgcctc gttccagacg cggctgtaaa
 8881 ccacggcccc ctcggagtct cttgcgcgca tcaccacctg agcgaggtta agctccacgt
 8941 gtctggtgaa gaccgcatag ttgcataggc gctgaaaaag gtagttgagt gtggtggcaa
 9001 tgtgttcggc gacgaagaaa tacatgatcc atcgtctcag cggcatttcg ctaacatcgc
 9061 ccagagcttc caagcgctcc atggcctcgt agaagtccac ggcaaaatta aaaaactggg
 9121 agtttcgcgc ggacacggtc aattcctcct cgagaagacg gatgagttcg gctatggtgg
 9181 cccgtacttc gcgttcgaag gctcccggga tctcttcttc ctcttctatc tcttcttcca
 9241 ctaacatctc ttcttcgtct tcaggcgggg gcggaggggg cacgcggcga cgtcgacggc
 9301 gcacgggcaa acggtcgatg aatcgttcaa tgacctctcc gcgggcggcg cgcatggttt
 9361 cagtgacggc gcggccgttc tcgcgcggtc gcagagtaaa aacaccgccg cgcatctcct
 9421 taaagtggtg actgggaggt tctccgtttg ggagggagag ggcgctgatt atacatttta
 9481 ttaattggcc cgtagggact gcgcgcagag atctgatcgt gtcaagatcc acgggatctg
 9541 aaaacctttc gacgaaagcg tctaaccagt cacagtcaca aggtaggctg agtacggctt
 9601 cttgtgggcg ggggtggtta tgtgttcggt ctgggtcttc tgtttcttct tcatctcggg
 9661 aaggtgagac gatgctgctg gtgatgaaat taaagtaggc agttctaaga cggcggatgg
 9721 tggcgaggag caccaggtct ttgggtccgg cttgctggat acgcaggcga ttggccattc
 9781 cccaagcatt atcctgacat ctagcaagat ctttgtagta gtcttgcatg agccgttcta
 9841 cgggcacttc ttcctcaccc gttctgccat gcatacgtgt gagtccaaat ccgcgcattg
 9901 gttgtaccag tgccaagtca gctacgactc tttcggcgag gatggcttgc tgtacttggg
 9961 taagggtggc ttgaaagtca tcaaaatcca caaagcggtg gtaagcccct gtattaatgg
10021 tgtaagcaca gttggccatg actgaccagt taactgtctg gtgaccaggg cgcacgagct
10081 cggtgtattt aaggcgcgaa taggcgcggg tgtcaaagat gtaatcgttg caggtgcgca
10141 ccagatactg gtaccctata agaaaatgcg gcggtggttg gcggtagaga ggccatcgtt
10201 ctgtagctgg agcgccaggg gcgaggtctt ccaacataag gcggtgatag ccgtagatgt
10261 acctggacat ccaggtcgatt cctgcggcgg tagtagaagc ccgaggaaac tcgcgtacgc
10321 ggttccaaat gttgcgtagc ggcatgaagt agttcattgt aggcacggtt tgaccagtga
10381 ggcgcgcgca gtcattgatg ctctatagac acggagaaaa tgaaagcgtt cagcgactcg
10441 actccgtagc ctggaggaac gtgaacgggt tgggtcgcgg tgtaccccgg ttcgagactt
10501 gtactcgagc cggccggagc cgcggctaac gtggtattgg cactcccgtc tcgacccagc
10561 ctacaaaaat ccaggatacg gaatcgagtc gttttgctgg tttccgaatg gcagggaagt
10621 gagtcctatt tttttttttt ttttgccgct cagatgcatc ccgtgctgcg acagatgcgc
10681 ccccaacaac agcccccctc gcagcagcag cagcagcagc aaccacaaaa ggctgtccct
10741 gcaactactg caactgccgc cgtgagcggt gcgggacagc ccgcctatga tctggacttg
10801 gaagagggca aaggactggc acgtctaggt gcgccttcgc ccgagcggca tccgcgagtt
10861 caactgaaaa aagattctcg cgaggcgtat gtgccccaac agaacctatt tagagacaga
10921 agcggcgagg agccggagga gatgcgagct tcccgcttta acgcgggtcg tgagctgcgt
10981 cacggtttgg accgaagacg agtgttgcga gacgaggatt tcgaagttga tgaagtgaca
11041 gggatcagtc ctgccagggc acacgtggct gcagccaacc ttgtatcggc ttacgagcag
11101 acagtaaagg aagagcgtaa cttccaaaag tcttttaata atcatgtgcg aaccctgatt
11161 gcccgcgaag aagttaccct tggtttgatg catttgtggg atttgatgga agctatcatt
11221 cagaaccca ctagcaaacc tctgaccgcc cagctgtttc tggtggtgca acacagcaga
11281 gacaatgagg ctttcagaga ggcgctgctg aacatcaccg aacccgaggg gagatggttg
```

FIG. 2A-3

```
11341 tatgatctta tcaacattct acagagtatc atagtgcagg agcggagcct gggcctggcc
11401 gagaaggtag ctgccatcaa ttactcggtt ttgagcttgg gaaaatatta cgctcgcaaa
11461 atctacaaga ctccatacgt tcccatagac aaggaggtga agatagatgg gttctacatg
11521 cgcatgacgc tcaaggtctt gaccctgagc gatgatcttg gggtgtatcg caatgacaga
11581 atgcatcgcg cggttagcgc cagcaggagg cgcgagttaa gcgcacaggga actgatgcac
11641 agtttgcaaa gagctctgac tggagctgga accgagggtg agaattactt cgacatggga
11701 gctgacttgc agtggcagcc tagtcgcagg gctctgagcg ccgcgacggc aggatgtgag
11761 cttccttaca tagaagaggc ggatgaaggc gaggaggaag agggcgagta cttggaagac
11821 tgatggcaca acccgtgttt tttgctagat ggaacagcaa gcaccggatc ccgcaatgcg
11881 ggcggcgctg cagagccagc cgtccggcat taactcctcg gacgattgga cccaggccat
11941 gcaacgtatc atggcgttga cgactcgcaa ccccgaagcc tttagacagc aaccccaggc
12001 caaccgtcta tcggccatca tggaagctgt agtgccttcc cgatctaatc ccactcatga
12061 gaaggtcctg gccatcgtga acgcgttggt ggagaacaaa gctattcgtc cagatgaggc
12121 cggactggta tacaacgctc tcttagacg cgtggctcgc tacaacagta gcaatgtgca
12181 aaccaatttg gaccgtatga taacagatgt acgcgaagcc gtgtctcagc gcgaaaggtt
12241 ccagcgtgat gccaacctgg gttcgctggt ggcgttaaat gctttcttga gtactcagcc
12301 tgctaatgtg ccgcgtggtc aacaggatta tactaacttt ttaagtgctt tgagactgat
12361 ggtatcagaa gtacctcaga gcgaagtgta tcagtccggt cctgattact tctttcagac
12421 tagcagacag ggcttgcaga cggtaaatct gagccaagct tttaaaaacc ttaaaggttt
12481 gtggggagtg catgccccgg taggagaaag agcaaccgtg tctagcttgt taactccgaa
12541 ctccccgcctg ttattactgt tggtagctcc tttcaccgac agcggtagca tcgaccgtaa
12601 ttcctatttg ggttacctac taaacctgta tcgcgaagcc ataggggcaaa gtcaggtgga
12661 cgagcagacc tatcaagaaa ttacccaagt cagtcgcgct ttgggacagg aagacactgg
12721 cagtttggaa gccactctga acttcttgct taccaatcgg tctcaaaaga tccctcctca
12781 atatgctctt actgcggagg aggagaggat ccttagatat gtgcagcaga gcgtgggatt
12841 gtttctgatg caagagggggg caactccgac tgcagcactg gacatgacag cgcgaaatat
12901 ggagcccagc atgtatgcca gtaaccgacc tttcattaac aaactgctgg actacttgca
12961 cagagctgcc gctatgaact ctgattattt caccaatgcc atcttaaacc cgcactggct
13021 gcccccacct ggtttctaca cgggcgaata tgacatgccc gaccctaatg acggatttct
13081 gtgggacgac gtggacagcg atgttttttc acctcttttct gatcatcgca cgtggaaaaa
13141 ggaaggcggt gatagaatgc attcttctgc atcgctgtcc ggggtcatgg gtgctaccgc
13201 ggctgagccc gagtctgcaa gtccttttcc tagtctaccc ttttctctac acagtgtacg
13261 tagcagcgaa gtgggtagaa taagtcgccc gagtttaatg ggcgaagagg agtacctaaa
13321 cgattccttg ctcagaccgg caagagaaaa aaatttccca aacaatggaa tagaaagttt
13381 ggtggataaa atgagtagat ggaagactta tgctcaggat cacagagacg agcctgggat
13441 catggggact acaagtagag cgagccgtag acgccagcgc catgacagac agaggggtct
13501 tgtgtgggac gatgaggatt cggccgatga tagcagcgtg ttggacttgg gtgggagagg
13561 aaggggcaac ccgtttgctc atttgcgccc tcgcttgggt ggtatgttgt gaaaaaaaat
13621 aaaaaagaaa aactcaccaa ggccatcgg acgagcgtac gttcgttctt ctttattatc
13681 tgtgtctagt ataatgaggc gagtcgtgct aggcggagcg gtggtgtatc cggagggtcc
13741 tcctccttcg tacgagagcg tgatgcagca gcagcaggcg acggcggtga tgcaatcccc
13801 actggaggct ccctttgtgc ctccgcgata cctggcacct acggagggca gaaacagcat
13861 tcgttactcg gaactggcac ctcagtacga taccaccagg ttgtatctgg tggacaacaa
13921 gtcggcggac attgcttctc tgaactatca gaatgaccac agcaacttct tgaccacggt
13981 ggtgcagaac aatgacttta cccctacgga agccagcacc cagaccatta actttgatga
14041 acgatcgcgg tggggcggtc agctaaagac catcatgcat actaacatgc caaacgtgaa
14101 cgagtatatg tttagtaaca gttcaaagc gcgtgtgatg gtgtccagaa aacctcccga
14161 cggttgctgca gttggggata cttatgatca caagcaggat attttggaat atgagtggtt
14221 cgagtttact ttgccagaag gcaacttttc agttactatg actattgatt tgatgaacaa
14281 tgccatcata gataattact tgaaagtggg tagacagaat ggagtgcttg aaagtgacat
14341 tggtgttaag ttcgacacca ggaacttcaa gctgggatgg gatcccgaaa ccaagttgat
14401 catgcctgga gtgtatacgt atgaagcctt ccatcctgac attgtcttac tgcctggctg
14461 cggagtggat tttaccgaga gtcgtttgag caaccttctt ggtatcagaa aaaaacagcc
14521 atttcaagag ggtttttaaga ttttgtatga agatttagaa ggtggtaata ttccggccct
14581 cttggatgta gatgcctatg agaacagtaa gaaagaacaa aaagccaaaa tagaagctgc
14641 tacagctgct gcagaagcta aggcaaacat agttgccagc gactctacaa gggttgctaa
14701 cgctggagag gtcagaggag acaattttgc gccaacacct gttccgactg cagaatcatt
14761 attggccgat gtgtctgatg gaacggacgt gaaactcact attcaacctg tagaaaaaga
14821 tagtaagaat agaagctata atgtgttgga agacaaaatc aacacagcct atcgcagttg
14881 gtatctttcg tacaattatg gcgatcccga aaaaggagtg cgttcctgga cattgctcac
14941 cacctcagat gtcacctgcg gagcagagca ggtttactgg tcgcttccag acatgatgaa
15001 ggatcctgtc actttccgct ccactagaca agtcagtaac taccctgtgg tgggtgcaga
15061 gcttatgccc gtcttctcaa agagcttcta caacgaacaa gctgtgtact cccagcagct
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FIG. 2A-4

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15121 ccgccagtcc acctcgctta cgcacgtctt caaccgcttt cctgagaacc agattttaat
15181 ccgtccgccg gcgcccacca ttaccaccgt cagtgaaaac gttcctgctc tcacagatca
15241 cgggaccctg ccgttgcgca gcagtatccg gggagtccaa cgtgtgaccg ttactgacgc
15301 cagacgccgc acctgtccct acgtgtacaa ggcactgggc atagtcgcac cgcgcgtcct
15361 ttcaagccgc actttctaaa aaaaaaatgt ccattcttat ctcgcccagt aataacaccg
15421 gttggggtct gcgcgctcca agcaagatgt acggaggcgc acgcaaacgt tctacccaac
15481 atcccgtgcg tgttcgcgga cattttcgcg ctccatgggg tgccctcaag ggccgcactc
15541 gcgttcgaac caccgtcgat gatgtaatcg atcaggtggt tgccgacgcc cgtaattata
15601 ctcctactgc gcctacatct actgtggatg cagttattga cagtgtagtg gctgacgctc
15661 gcaactatgc tcgacgtaag agccggcgaa ggcgcattgc cagacgccac cgagctacca
15721 ctgccatgcg agccgcaaga gctctgctac gaagagctag acgcgtgggg cgaagagcca
15781 tgcttaggcg ggccagacgt gcagcttcgg gcgccagcgc cggcaggtcc cgcaggcaag
15841 cagccgctgt cgcagcggcg actattgccg acatggccca atcgcgaaga ggcaatgtat
15901 actgggtgcg tgacgctgcc accggtcaac gtgtacccgt gcgcacccgt cccctcgca
15961 cttagaagat actgagcagt ctccgatgtt gtgtcccagc ggcgaggatg tccaagcgca
16021 aatacaagga agaaatgctg caggttatcg cacctgaagt ctacggccaa ccgttgaagg
16081 atgaaaaaaa accccgcaaa atcaagcggg ttaaaaagga caaaaaagaa gaggaagatg
16141 gcgatgatgg gctggcggag tttgtgcgcg agtttgcccc acggcgacgc gtgcaatggc
16201 gtgggcgcaa agttcgacat gtgttgagac ctggaacttc ggtggtcttt acaccccggcg
16261 agcgttcaag cgctactttt aagcgttcct atgatgaggt gtacggggat gatgatattc
16321 ttgagcaggc ggctgaccga ttaggcgagt ttgcttatgg caagcgtagt agaataactt
16381 ccaaggatga gacagtgtca atacccttgg atcatggaaa tcccaccccct agtcttaaac
16441 cggtcacttt gcagcaagtg ttacccgtaa ctccgcgaac aggtgttaaa cgcgaaggtg
16501 aagatttgta tcccactatg caactgatgg tacccaaacg ccagaagttg gaggacgttt
16561 tggagaaagt aaaagtggat ccagatattc aacctgaggt taaagtgaga cccattaagc
16621 aggtagcgcc tggtctgggg gtacaaactg tagacattaa gattcccact gaaagtatgg
16681 aagtgcaaac tgaacccgca aagcctactg ccacctccac tgaagtgcaa acggatccat
16741 ggatgcccat gcctattaca actgacgccg ccggtcccac tcgaagatcc cgacgaaagt
16801 acggtccagc aagtctgttg atgcccaatt atgttgtaca cccatctatt attcctactc
16861 ctggttaccg aggcactcgc tactatcgca gccgaaacag tacctcccgc cgtcgccgca
16921 agacacctgc aaatcgcagt cgtcgccgta gacgcacaag caaaccgact cccggcgccc
16981 tggtgcggca agtgtaccgc aatggtagtg cggaaccttt gacactgccg cgtgcgcgtt
17041 accatccgag tatcatcact taatcaatgt tgccgctgcc tccttgcaga tatggccctc
17101 acttgtcgcc ttcgcgttcc catcactggt taccgaggaa gaaactcgcg ccgtagaaga
17161 gggatgttgg gacgcggaat gcgacgctac aggcgacggc gtgctatccg caagcaattg
17221 cggggtggtt ttttaccagc cttaattcca attatcgctg ctgcaattgg cgcgatacca
17281 ggcatagctt ccgtggcggt tcaggcctcg caacgacatt gacattggaa aaaaaacgta
17341 taaataaaaa aaaatacaat ggactctgac actcctggtc ctgtgactat gttttcttag
17401 agatggaaga catcaatttt tcatccttgg ctccgcgaca cggcacgaag ccgtacatgg
17461 gcacctggag cgacatcggc acgagccaac tgaacggggg cgccttcaat tggagcagta
17521 tctggagcgg gcttaaaaat tttggctcaa ccataaaaac atacgggaac aaagcttgga
17581 acagcagtac aggacaggcg cttagaaata aacttaaaga ccagaacttc caacaaaaag
17641 tagtcgatgg gatagcttcc ggcatcaatg gagtggtaga tttggctaac caggctgtgc
17701 agaaaaagat aaacagtcgt ttggacccgc cgccagcaac cccaggtgaa atgcaagtgg
17761 aggaagaaat tcctccgcca gaaaaacgag gcgacaagcg tccgcgtccc gatttggaag
17821 agacgctggt gacgcgcgta gatgaaccgc cttcttatga ggaagcaacg aagcttggaa
17881 tgcccaccac tagaccgata gccccaatgg ccaccggggt gatgaaacct tctcagttgc
17941 atcgacccgt caccttggat ttgccccctc ccctgctgc tactgctgta cccgcttcta
18001 agcctgtcgc tgccccgaaa ccagtcgccg tagccaggtc acgtcccggg ggcgctcctc
18061 gtccaaatgc gcactggcaa aatactctga acagcatcgt gggtctaggc gtgcaaagtg
18121 taaaacgccg tcgctgcttt taattaaata tggagtagcg cttaacttgc ctatctgtgt
18181 atatgtgtca ttacacgccg tcacagcagc agaggaaaaa aggaagaggt cgtgcgtcga
18241 cgctgagtta cttcaagat ggccacccca tcgatgctgc cccaatgggc atacatgcac
18301 atcgccggac aggatgcttc ggagtacctg agtccgggtc tggtgcagtt cgcccgcgcc
18361 acagacacct acttcaatct gggaaataag tttagaaatc ccaccgtagc gccgacccac
18421 gatgtgacca ccgaccgtag ccagcggctc atgttgcgct tcgtgcccgt tgaccgggag
18481 gacaatacat actcttacaa agtgcggtac accctggccg tgggcgacaa cagagtgctg
18541 gatatggcca gcacgttctt tgacattagg ggcgtgttgg acagaggtcc cagtttcaaa
18601 ccctattctg gtacggctta caactctctg gctcctaaag gcgctccaaa tgcatctcaa
18661 tggattgcaa aaggcgtacc aactgcagca gccgcaggca atgtgaagga agaacatgaa
18721 acagaggaga aaactgctac ttacactttt gccaatgctc ctgtaaaagc cgaggctcaa
18781 attacaaaag agggcttacc aataggtttg gagatttcag ctgaaaacga atctaaaccc
18841 atctatgcag ataaacttta tcagccagaa cctcaagtgg gagatgaaac ttggactgac
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FIG. 2A-5

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18901 ctagacggaa aaaccgaaga gtatggaggc agggctctaa agcctactac taacatgaaa
18961 ccctgttacg ggtcctatgc gaagcctact aatttaaaag gtggtcaggc aaaaccgaaa
19021 aactcggaac cgtcgagtga aaaaattgaa tatgatattg acatggaatt ttttgataac
19081 tcatcgcaaa gaacaaactt cagtcctaaa attgtcatgt atgcagaaaa tgtaggtttg
19141 gaaacgccag acactcatgt agtgtacaaa cctggaacag aagacacaag ttccgaagct
19201 aatttgggac aacagtctat gcccaacaga cccaactaca ttggcttcag agataacttt
19261 attggactca tgtactataa cagtactggt aacatggggg tgctggctgg tcaagcgtct
19321 cagttaaatg cagtggttga cttgcaggac agaaacacag aactttctta ccaactcttg
19381 cttgactctc tgggcgacag aaccagatac tttagcatgt ggaatcaggc tgtggacagt
19441 tatgatcctg atgtacgtgt tattgaaaat catggtgtgg aagatgaact tcccaactat
19501 tgttttccac tggacggcat aggtgttcca acaaccagtt acaaatcaat agttccaaat
19561 ggagaagata ataataattg gaaagaacct gaagtaaatg gaacaagtga gatcggacag
19621 ggtaatttgt ttgccatgga aattaacctt caagccaatc tatggcgaag tttcctttat
19681 tccaatgtgg ctctgtatct cccagactcg tacaaataca ccccgtccaa tgtcactctt
19741 ccagaaaaca aaaacaccta cgactacatg aacgggcggg tggtgccgcc atctctagta
19801 gacacctatg tgaacattgg tgccaggtgg tctctggatg ccatggacaa tgtcaaccca
19861 ttcaaccacc accgtaacgc tggcttgcgt taccgatcta tgcttctggg taacggacgt
19921 tatgtgcctt tccacataca agtgcctcaa aaattcttcg ctgttaaaaa cctgctgctt
19981 ctcccaggct cctacactta tgagtggaac tttaggaagg atgtgaacat ggttctacag
20041 agttccctcg gtaacgacct gcgggtagat ggcgccagca tcagtttcac gagcatcaac
20101 ctctatgcta ctttttcccc catggctcac aacaccgctt ccaccttga agccatgctg
20161 cggaatgaca ccaatgatca gtcattcaac gactacctat ctgcagctaa catgctctac
20221 cccattcctg ccaatgcaac caatattccc atttccattc cttctcgcaa ctgggcggct
20281 ttcagaggct ggtcatttac cagactgaaa accaaagaaa ctccctcttt ggggtctgga
20341 tttgacccct actttgtcta ttctggttct attccctacc tggatggtac cttctacctg
20401 aaccacactt ttaagaaggt ttccatcatg tttgactctt cagtgagctg gcctggaaat
20461 gacaggttac tatctcctaa cgaatttgaa ataaagcgca ctgtggatgg cgaaggctac
20521 aacgtagccc aatgcaacat gaccaaagac tggttcttgg tacagatgct cgccaactac
20581 aacatcggct atcagggctt ctacattcca gaaggataca aagatcgcat gtattcattt
20641 ttcagaaact tccagcccat gagcaggcag gtggttgatg aggtcaatta caaagacttc
20701 aaggccgtcg ccataccta ccaacacaac aactctggct ttgtgggtta catggctccg
20761 accatgcgcc aaggtcaacc ctatcccgct aactatccct atccactcat tggaacaact
20821 gccgtaaata gtgttacgca gaaaaagttc ttgtgtgaca gaaccatgtg gcgcataccg
20881 ttctcgagca acttcatgtc tatgggggcc cttacagact gggacagaa tatgctctat
20941 gccaactcag ctcatgctct ggacatgacc tttgaggtgg atcccatgga tgagcccacc
21001 ctgctttatc ttctcttcga agttttcgac gtggtcagag tgcatcagcc acaccgcggc
21061 atcatcgagg cagtctacct gcgtacaccg ttctcggccg gtaacgctac cacgtaagaa
21121 gcttcttgct tcttgcaaat agcagctgca accatggcct gcggatccca aaacggctcc
21181 agcgagcaag agctcagagc cattgtccaa gacctgggtt gcggacccta tttttgggga
21241 acctacgata agcgcttccc gggttcatg gcccccgata agctcgcctg tgccattgta
21301 aatacggccg gacgtgagac gggggggagag cactggttgg ctttcggttg gaacccacgt
21361 tctaacacct gctacctttt tgatcctttt ggattctcgg atgatcgtct caaacagatt
21421 taccagtttg aatatgaggg tctcctgcgc cgcagcgctc ttgctaccaa ggaccgctgt
21481 attacgctgg aaaaatctac ccagaccgtg cagggccccc gttctgccgc ctgcggactt
21541 ttctgctgca tgttccttca cgcctttgtg cactggcctg accgtccat ggacggaaac
21601 cccaccatga aattgctaac tggagtgcca aacaacatgc ttcattctcc taaagtccag
21661 cccaccctgt gtgacaatca aaaagcactc taccatttc ttaatacccca ttcgccttat
21721 tttcgctctc atcgtacaca catcgaaagg gccactgcgt tcgaccgtat ggatgttcaa
21781 taatgactca tgtaaacaac gtgttcaata aacatcactt tattttttta catgtatcaa
21841 ggctctggat tacttattta tttacaagtc gaatgggttc tgacgagaat cagaatgacc
21901 cgcaggcagt gatacgttgc ggaactgata cttgggttgc cacttgaatt cgggaatcac
21961 caacttggga accggtatat cgggcaggat gtcactccac agctttctgg tcagctgcaa
22021 agctccaagc aggtcaggag ccgaaatctt gaaatcacaa ttaggaccag tgctctgagc
22081 gcgagagttg cggtacaccg gattgcagca ctgaaacacc atcagcgacg gatgtctcac
22141 gcttgccagc acggtgggat ctgcaatcat gcccacatcc agatcttcag cattggcaat
22201 gctgaacggg gtcatcttgc aggtctgcct acccatggcg ggcacccaat taggcttgtg
22261 gttgcaatcg cagtgcaggg ggatcagtat catcttggcc tgatcctgtc tgattcctgg
22321 atacacggct ctcatgaaag catcatattg cttgaaagcc tgctgggctt tactaccctc
22381 ggtataaaac atcccgcagg acctgctcga aaactggtta gctgcacagc cggcatcatt
22441 cacacagcag cgggcgtcat tgttggctat ttgcaccaca cttctgcccc agcggttttg
22501 ggtgattttg gttcgctcgg gattctcctt taaggctcgt tgtccgttct cgctggccac
22561 atccatctcg ataatctgct ccttctgaat cataatattg ccatgcaggc acttcagctt
22621 gccctcataa tcattgcagc catgaggcca caacgcacag cctgtacatt cccaattatg
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FIG. 2A-6

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22681 gtgggcgatc tgagaaaaag aatgtatcat tccctgcaga aatcttccca tcatcgtgct
22741 cagtgtcttg tgactagtga aagttaactg gatgcctcgg tgctcttcgt ttacgtactg
22801 gtgacagatg cgcttgtatt gttcgtgttg ctcaggcatt agtttaaaac aggttctaag
22861 ttcgttatcc agcctgtact tctccatcag cagacacatc acttccatgc ctttctccca
22921 agcagacacc aggggcaagc taatcggatt cttaacagtg caggcagcag ctcctttagc
22981 cagagggtca tctttagcga tcttctcaat gcttcttttg ccatccttct caacgatgcg
23041 cacgggcggg tagctgaaac ccactgctac aagttgcgcc tcttctcttt cttcttcgct
23101 gtcttgactg atgtcttgca tggggatatg tttggtcttc cttggcttct ttttggggggg
23161 tatcggagga ggaggactgt cgctccgttc cggagacagg gaggattgtg acgtttcgct
23221 caccattacc aactgactgt cggtagaaga acctgacccc acacggcgac aggtgttttt
23281 cttcgggggc agaggtggag gcgattgcga agggctgcgg tccgacctgg aaggcggatg
23341 actggcagaa ccccttccgc gttcgggggt gtgctccctg tggcggtcgc ttaactgatt
23401 tccttcgcgg ctggccattg tgttctccta ggcagagaaa caacagacat ggaaactcag
23461 ccattgctgt caacatcgcc acgagtgcca tcacatctcg tcctcagcga cgaggaaaag
23521 gagcagagct taagcattcc accgcccagt cctgccacca cctctaccct agaagataag
23581 gaggtcgacg catctcatga catgcagaat aaaaaagcga aagagtctga gacagacatc
23641 gagcaagacc cgggctatgt gacaccggtg gaacacgagg aagagttgaa acgctttcta
23701 gagagagagg atgaaaactg cccaaaacag cgagcagata actatcacca agatgctgga
23761 aatagggatc agaacaccga ctacctcata gggcttgacg gggaagacgc gctccttaaa
23821 catctagcaa gacagtcgct catagtcaag gatgcattat tggacagaac tgaagtgccc
23881 atcagtgtgg aagagctcag ctgcgcctac gagcttaacc tttttcacc tcgtactccc
23941 cccaaacgtc agccaaacgg cacctgcgag ccaaatcctc gcttaaactt ttatccagct
24001 tttgctgtgc cagaagtact ggctacctat cacatctttt ttaaaaatca aaaaattcca
24061 gtctcctgcc gcgctaatcg cacccgcgcc gatgccctac tcaatctggg acctggttca
24121 cgcttacctg atatagcttc cttggaagag gttccaaaga tcttcgaggg tctgggcaat
24181 aatgagactc gggccgcaaa tgctctgcaa aagggagaaa atggcatgga tgagcatcac
24241 agcgttctgg tggaattgga aggcgataat gccagactcg cagtactcaa gcgaagcgtc
24301 gaggtcacac acttcgcata tcccgctgtc aacctgcccc ctaaagtcat gacggcggtc
24361 atggaccagt tactcattaa gcgcgcaagt cccctttcag aagacatgca tgacccagat
24421 gcctgtgatg agggtaaacc agtgtcagt gatgagcagc taacccgatg gctgggcacc
24481 gactctcccc gggatttgga agagcgtcgc aagcttatga tggccgtggt gctggttacc
24541 gtagaactag agtgtctccg acgtttcttt accgattcag aaaccttgcg caaactcgaa
24601 gagaatctgc actacacttt tagacacggc tttgtgcggc aggcatgcaa gatatctaac
24661 gtggaactca ccaacctggt ttcctacatg ggtattctgc atgagaatcg cctaggacaa
24721 agcgtgctgc acagcaccct taaggggaa gcccgccgtg attacatccg cgattgtgtc
24781 tatctctacc tgtgccacac gtggcaaacc ggcatgggtg tatggcagca atgtttagaa
24841 gaacagaact tgaaagagct tgacaagctc ttacagaaat ctcttaaggt tctgtggaca
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25021 cgctctttca tcctggaacg ctccggtatc ctgcccgcca cctgctgcgc actgccctcc
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25141 ttccgtctgg ccaactatct ctcctaccac tcggatgtga tcgaggatgt gagcggagac
25201 ggcttgctgg agtgccactg ccgctgcaat ctgtgcacgc cccaccggtc cctagcttgc
25261 aaccccagt tgatgagcga aacccagata ataggcacct ttgaattgca aggccccagc
25321 agccaaggcg atgggtcttc tcctgggcaa agtttaaaac tgaccccggg actgtggacc
25381 tccgcctact tgcgcaagtt tgctccggaa gattaccacc cctatgaaat caagttctat
25441 gaggaccaat cacagcctcc aaaggccgaa ctttcggctt gcgtcatcac ccagggggca
25501 attctggccc aattgcaagc catccaaaaa tcccgccaag aatttctact gaaaaagggt
25561 aaggggggtct accttgaccc ccagaccggc gaggaactca acacaaggtt ccctcaggat
25621 gtcccaacga cgagaaaaca agaagttgaa ggtgcagccg ccgcccccag aagatatgga
25681 ggaagattgg gacagtcagg cagaggaggc ggaggaggac agtctggagg acagtctgga
25741 ggaagacagt ttggaggagg aaaacgagga ggcagaggag gtggaagaag taaccgccga
25801 caaacagtta tcctcggctg cggagacaag caacagcgct accatctccg ctccgagtcg
25861 aggaacccgg cggcgtccca gcagtagatg ggacgagacc ggacgcttcc cgaacccaac
25921 cagcgcttcc aagacggatc agaaggatcg gcagggatac aagtcctggc gggggcataa
25981 gaatgccatc atctcctgct tgcatgagtg cggggggcaac atatccttca cgcggcgcta
26041 cttgctattc caccatgggg tgaactttcc gcgcaatgtt ttgcattact accgtcacct
26101 ccacagcccc tactatagcc agcaaatccc gacagtctcg acagataaag acagcggcgg
26161 cgacctccaa cagaaaacca gcagcggcag ttagaaaata cacaacaagt gcagcaacag
26221 gaggattaaa gattacagcc aacgagccag cgcaaacccg agagttaaga aatcggatct
26281 ttccaaccct gtatgccatc ttccagcaga gtcggggtca agagcaggaa ctgaaaataa
26341 aaaaccgatc tctgcgttcg ctcaccagaa gttgtttgta tcacaagagc gaagatcaac
26401 ttcagcgcac tctcgaggac gccgaggctc tcttcaacaa gtactgcgcg ctgactctta
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26461 aagagtaggc agcgaccgcg cttattcaaa aaaggcggga attacatcat cctcgacatg
26521 agtaaagaaa ttcccacgcc ttacatgtgg agttatcaac cccaaatggg attggcagca
26581 ggcgcctccc aggactactc cacccgcatg aattggctca gcgccgggcc ttctatgatt
26641 tctcgagtta atgatatacg cgcctaccga aaccaaatac ttttggaaca gtcagctctt
26701 accaccacgc cccgccaaca ccttaatccc agaaattggc ccgccgccct agtgtaccag
26761 gaaagtcccg ctcccaccac tgtattactt cctcgagacg cccaggccga agtccaaatg
26821 actaatgcag gtgcgcagtt agctggcggc tccaccctat gtcgtcacag gcctcggcat
26881 aatataaaac gcctgatgat cagaggccga ggtatccagc tcaacgacga gtcggtgagc
26941 tctccgcttg gtctacgacc agacggaatc tttcagattg ccggctgcgg gagatcttcc
27001 ttcacccctc gtcaggctgt tctgactttg gaaagttcgt cttcgcaacc ccgctcgggc
27061 ggaatcggga ccgttcaatt tgtagaggag tttactccct ctgtctactt caaccccttc
27121 tccggatctc ctgggcacta cccggacgag ttcataccga acttcgacgc gattagcgag
27181 tcagtggacg gctacgattg atgtctggtg acgcggctga gctatctcgg ctgcgacatc
27241 tagaccactg ccgccgcttt cgctgctttg cccgggaact tattgagttc atctacttcg
27301 aactccccaa ggatcaccct caaggtccgg cccacggagt gcggattact atcgaaggca
27361 aaatagactc tcgcctgcaa cgaattttct cccagcggcc cgtgctgatc gagcgagacc
27421 agggaaacac cacggtttcc atctactgca tttgtaatca ccccggattg catgaaagcc
27481 tttgctgtct tatgtgtact gagtttaata aaaactgaat taagactctc ctacggactg
27541 ccgcttcttc aacccggatt ttacaaccag aagaacaaaa cttttcctgt cgtccaggac
27601 tctgttaact tcacctttcc tactcacaaa ctagaagctc aacgactaca ccgcttttcc
27661 agaagcattt tccctactaa tactactttc aaaaccggag gtgagctcca cggtctccct
27721 acagaaaacc cttgggtgga agcgggcctt gtagtactag gaattcttgc gggtgggctt
27781 gtgattattc tttgctacct atacacacct tgcttcactt tcctagtggt gttgtggtat
27841 tggtttaaaa aatggggccc atactagtct tgcttgtttt actttcgctt ttggaaccgg
27901 gttctgccaa ttacgatcca tgtctagact ttgacccaga aaactgcaca cttacttttg
27961 cacccgacac aagccgcatc tgtggagttc ttattaagtg cggatgggaa tgcaggtccg
28021 ttgaaattac acacaataac aaaacctgga acaatacctt atccaccaca tgggagccag
28081 gagttcccga gtggtacact gtctctgtcc gaggtcctga cggttccatc cgcattagta
28141 acaacacttt cattttttct gaaatgtcag atctggccat gttcatgagc aaacagtatt
28201 ctctatggcc tcctagcaag gacaacatcg taacgttctc cattgcttat tgcttgtgcg
28261 cttgccttct tactgcttta ctgtgcgtat gcatacacct gcttgtaacc actcgcatca
28321 aaaacgccaa taacaaagaa aaaatgcctt aacctctttc tgtttacaga catggcttct
28381 cttacatctc tcatatttgt cagcattgtc actgccgctc acggacaaac agtcgtctct
28441 atcccactag gacataatta cactctcata ggaccccaa tcacttcaga ggtcatctgg
28501 accaaactgg gaagcgttga ttactttgat ataatctgta acaaaacaaa accaataata
28561 gtaacttgca acatacaaaa tcttacattg attaatgtta gcaaagttta cagcggttac
28621 tattatggtt atgacagata cagtagtcaa tatagaaatt acttggttcg tgttacccag
28681 ttgaaaacca cgaaaatgcc aaatatggca aagattcgat ccgatgacaa ttctctagaa
28741 acttttacat ctcccaccac acccgacgaa aaaaacatcc cagattcaat gattgcaatt
28801 gttgcagcgg tggcagtggt gatggcacta ataataatat gcatgctttt atatgcttgt
28861 cgctacaaaa agtttcatcc taaaaaacaa gatctcctac taaggcttaa catttaattt
28921 cttttatac agccatggtt tccactacca cattccttat gcttactagt ctcgcaactc
28981 tgacttctgc tcgctcacac ctcactgtaa ctataggctc aaactgcaca ctaaaaggac
29041 ctcaaggtgg tcatgtcttt tggtggagaa tatatgacaa tggatggttt acaaaaccat
29101 gtgaccaacc tggtagattt ttctgcaacg gcagagacct aaccattatc aacgtgacag
29161 caaatgacaa aggcttctat atggcaaccg actataaag tagtttagat tataacatta
29221 ttgtactgcc atctaccact ccagcacccc gcacaactac tttctctagc agcagtgtcg
29281 ctaacaatac aatttccaat ccaacctttg ccgcgctttt aaaacgcact gtgaataatt
29341 ctacaacttc acatacaaca atttccactt caacaatcag catcatcgct gcagtgacaa
29401 ttggaatatc tattcttgtt tttaccataa cctactacgc ctgctgctat agaaaagaca
29461 aacataaagg tgatccatta cttagatttg atatttaatt tgttcttttt ttttatttac
29521 agtatggtga acaccaatca tggtacctag aaatttcttc ttcaccatac tcatctgtgc
29581 ttttaatgtt tgcgctactt tcacagcagt agccacagca accccagact gtataggagc
29641 atttgcttcc tatgcacttt ttgcttttgt tacttgcatc tgcgtatgta gcatagtctg
29701 cctggttatt aatttttccc aacttctaga ctggatcctt gtgcgaattg cctacctgcg
29761 ccaccatccc gaataccgca accaaaatat cgcggcactt cttagactca tctaaaacca
29821 tgcaggctat actaccaata tttttgcttc tattgcttcc ctacgctgtc tcaaccccag
29881 ctgcctatag tactccacca gaacacctta gaaaatgcaa attccaacaa ccgtggtcat
29941 ttcttgcttg ctatcgagaa aaatcagaaa tcccccccaaa tttaataatg attgctggaa
30001 taattaatat aatctgttgc accataattt cattttttgat atacccccta tttgattttg
30061 gctggaatgc tcccaatgca catgatcatc cacaagaccc agaggaacac attcccccac
30121 aaaacatgca acatccaata gcgctaatag attacgaaag tgaaccacaa cccccactac
30181 tccctgctat tagttacttc aacctaaccg gcggagatga ctgaaacact caccacctcc
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FIG. 2A-8

```
30241 aattccgccg aggatctgct cgatatggac ggccgcgtct cagaacaacg acttgcccaa
30301 ctacgcatcc gccagcagca ggaacgcgtg gccaaagagc tcagagatgt catccaaatt
30361 caccaatgca aaaaaggcat attctgtttg gtaaaacaag ccaagatatc ctacgagatc
30421 accgctactg accatcgcct ctcttacgaa cttggcccccc aacgacaaaa atttacctgc
30481 atggtgggaa tcaaccccat agttatcacc caacaaagtg gagatactaa gggttgcatt
30541 cactgctcct gcgattccat cgagtgcacc tacaccctgc tgaagaccct atgcgggccta
30601 agagacctgc taccaatgaa ttaaaaaaaa atgattaata aaaaatcact tacttgaaat
30661 cagcaataag gtctctgttg aaatttttctc ccagcagcac ctcacttccc tcttcccaac
30721 tctggtattc taaaccccgt tcagcggcat actttctcca tactttaaag gggatgtcaa
30781 attttagctc ctctcctgta cccacaatct tcatgtcttt cttcccagat gaccaagaga
30841 gtccggctca gtgactcctt caaccctgtc taccctatg aagatgaaag cacctcccaa
30901 cacccctta taaacccagg gtttatttcc ccaaatggct tcacacaaag cccagacgga
30961 gttcttactt taaaatgttt aaccccacta acaaccacag gcggatctct acagctaaaa
31021 gtgggagggg gacttacagt ggatgacact gatggtacct tacaagaaaa catacgtgct
31081 acagcaccca ttactaaaaa taatcactct gtagaactat ccattggaaa tggattagaa
31141 actcaaaaca ataaactatg tgccaaattg ggaaatgggt taaaatttaa caacggtgac
31201 atttgtataa aggatagtat taacaccta tggactggaa taaaccctcc acctaactgt
31261 caaattgtgg aaaacactaa tacaaatgat ggcaaactta ctttagtatt agtaaaaaat
31321 ggagggcttg ttaatggcta cgtgtctcta gttggtgtat cagacactgt gaaccaaatg
31381 ttcacacaaa agacagcaaa catccaatta agattatatt ttgactcttc tggaaatcta
31441 ttaactgagg aatcagactt aaaaattcca cttaaaaata aatcttctac agcgaccagt
31501 gaaactgtag ccagcagcaa agcctttatg ccaagtacta cagcttatcc cttcaacacc
31561 actactaggg atagtgaaaa ctacattcat ggaatatgtt actacatgac tagttatgat
31621 agaagtctat ttcccttgaa catttctata atgctaaaca gccgtatgat ttcttccaat
31681 gttgcctatg ccatacaatt tgaatggaat ctaaatgcaa gtgaatctcc agaaagcaac
31741 atagctacgc tgaccacatc ccccttttt ttttcttaca ttacagaaga cgacaactaa
31801 aataaagttt aagtgttttt attaaaaatc acaaaattcg agtagtatt ttgcctccac
31861 cttcccattt gacagaatac accaatctct ccccacgcac agctttaaac atttggatac
31921 cattagagat agacattgtt ttagattcca cattccaaac agtttcagag cgagccaatc
31981 tggggtcagt gatagataaa aatccatcgc gatagtcttt taaagcgctt tcacagtcca
32041 actgctgcgg atgcgactcc ggagtttgga tcacggtcat ctggaagaag aacgatggga
32101 atcataatcc gaaaacggta tcggacgatt gtgtctcatc aaacccacaa gcagccgctg
32161 tctgcgtcgc tccgtgcgac tgctgtttat gggatcaggg tccacagttt cctgaagcat
32221 gattttaata gcccttaaca tcaactttct ggtgcgatgc gcgcagcaac gcattctgat
32281 ttcactcaaa tctttgcagt aggtacaaca cattattaca atattgttta ataaaccata
32341 attaaaagcg ctccagccaa aactcatatc tgatataatc gcccctgcat gaccatcata
32401 ccaaagttta atataaatta aatgacgttc cctcaaaaac acactaccca catacatgat
32461 ctcttttggc atgtgcatat taacaatctg tctgtaccat ggacaacgtt ggttaatcat
32521 gcaacccaat ataaccttcc ggaaccacac tgccaacacc gctcccccag ccatgcattg
32581 aagtgaaccc tgctgattac aatgacaatg aagaacccaa ttctctcgac cgtgaatcac
32641 ttgagaatga aaaatatcta tagtggcaca acatagacat aaatgcatgc atcttctcat
32701 aattttttaac tcctcaggat ttagaaacat atcccaggga ataggaagct cttgcagaac
32761 agtaaagctg gcagaacaag gaagaccacg aacacaactt cactatgca tagtcatagt
32821 atcacaatct ggcaacagcg ggtggtcttc agtcatagaa gctcgggttt catttttcctc
32881 acaacgtggt aactgggctc tggtgtaagg gtgatgtctg gcgcatgatg tcgagcgtgc
32941 gcgcaacctt gtcataatgg agttgcttcc tgacattctc gtattttgta tagcaaaacg
33001 cggccctggc agaaccacct cttcttcgcc ttctatcctg ccgcttagcg tgttccgtgt
33061 gatagttcaa gtacagccac actcttaagt tggtcaaaag aatgctggct tcagttgtaa
33121 tcaaaactcc atcgcatcta attgttctga ggaaatcatc cacggtagca tatgcaaatc
33181 ccaaccaagc aatgcaactg gattgcgttt caagcaggag aggagaggga agagacggaa
33241 gaaccatgtt aatttttatt ccaaacgatc tcgcagtact tcaaattgta gatcgcgcag
33301 atggcatctc tcgcccccac tgtgttggtg aaaaagcaca gctaaatcaa aagaaatgcg
33361 attttcaagg tgctcaacgg tggcttccaa caaagcctcc acgcgcacat ccaagaacaa
33421 aagaatacca aaagaaggag cattttctaa ctcctcaatc atcatattac attcctgcac
33481 cattcccaga taatttttcag cttttccagcc ttgaattatt cgtgtcagtt cttgtggtaa
33541 atccaatcca cacattacaa acaggtcccg gagggcgccc tccaccacca ttcttaaaca
33601 caccctcata atgacaaaat atcttgctcc tgtgtcacct gtagcgaatt gagaatggca
33661 acatcaattg acatgcccptt ggctctaagt tcttcttttaa gttctagttg taaaaactct
33721 ctcatattat caccaaactg cttagccaga agcccccccgg gaacaagagc aggggacgct
33781 acagtgcagt acaagcgcag acctccccaa ttggctccag caaaaacaag attggaataa
33841 gcatattggg aaccaccagt aatatcatcg aagttgctgg aaatataatc aggcagagtt
33901 tcttgtagaa attgaataaa agaaaaattt gccaaaaaaa cattcaaaac ctctgggatg
33961 caaatgcaat aggttaccgc gctgcgctcc aacattgtta gttttgaatt agtctgcaaa
```

FIG. 2A-9

```
34021 aataaaaaaa aaacaagcgt catatcatag tagcctgacg aacaggtgga taaatcagtc
34081 tttccatcac aagacaagcc acagggtctc cagctcgacc ctcgtaaaac ctgtcatcgt
34141 gattaaacaa cagcaccgaa agttcctcgc ggtgaccagc atgaataagt cttgatgaag
34201 catacaatcc agacatgtta gcatcagtta aggagaaaaa acagccaaca tagcctttgg
34261 gtataattat gcttaatcgt aagtatagca aagccacccc tcgcggatac aaagtaaaag
34321 gcacaggaga ataaaaaata taattatttc tctgctgctg tttaggcaac gtcgcccccg
34381 gtccctctaa atacacatac aaagcctcat cagccatggc ttaccagaga aagtacagcg
34441 ggcacacaaa ccacaagctc taaagtcact ctccaacctc tccacaatat atatacacaa
34501 gccctaaact gacgtaatgg gactaaagtg taaaaaatcc cgccaaaccc aacacacacc
34561 ccgaaactgc gtcaccaggg aaaagtacag tttcacttcc gcaatcccaa caagcgtcac
34621 ttcctctttc tcacggtacg tcacatccca ttaacttaca acgtcatttt cccacggccg
34681 cgccgcccct tttaaccgtt aaccccacag ccaatcacca cacggcccac acttttaaa
34741 atcacctcat ttacatattg gcaccattcc atctataagg tatattattg atgatg
SEQ ID NO: 1
```

FIG. 2A-10

Amp^r ori   Ad35 ITR cassette

Pme I

Pme I
(bp 4 to 456)

(bp 34419 to 34793)

Swa I   Δ E1

(bp 3403 to 3886)

ITR   ITR

wt Ad35 Viral DNA

FIG. 3

FIG. 4

Amp^r   ori   Ad35 ITR cassette

Pme I

(bp 34419 to 34793)

Pme I

(bp 4 to 456)

Δ E4
Ad5 Orf6

Swa I   Δ E1

(bp 31599 to 31913)
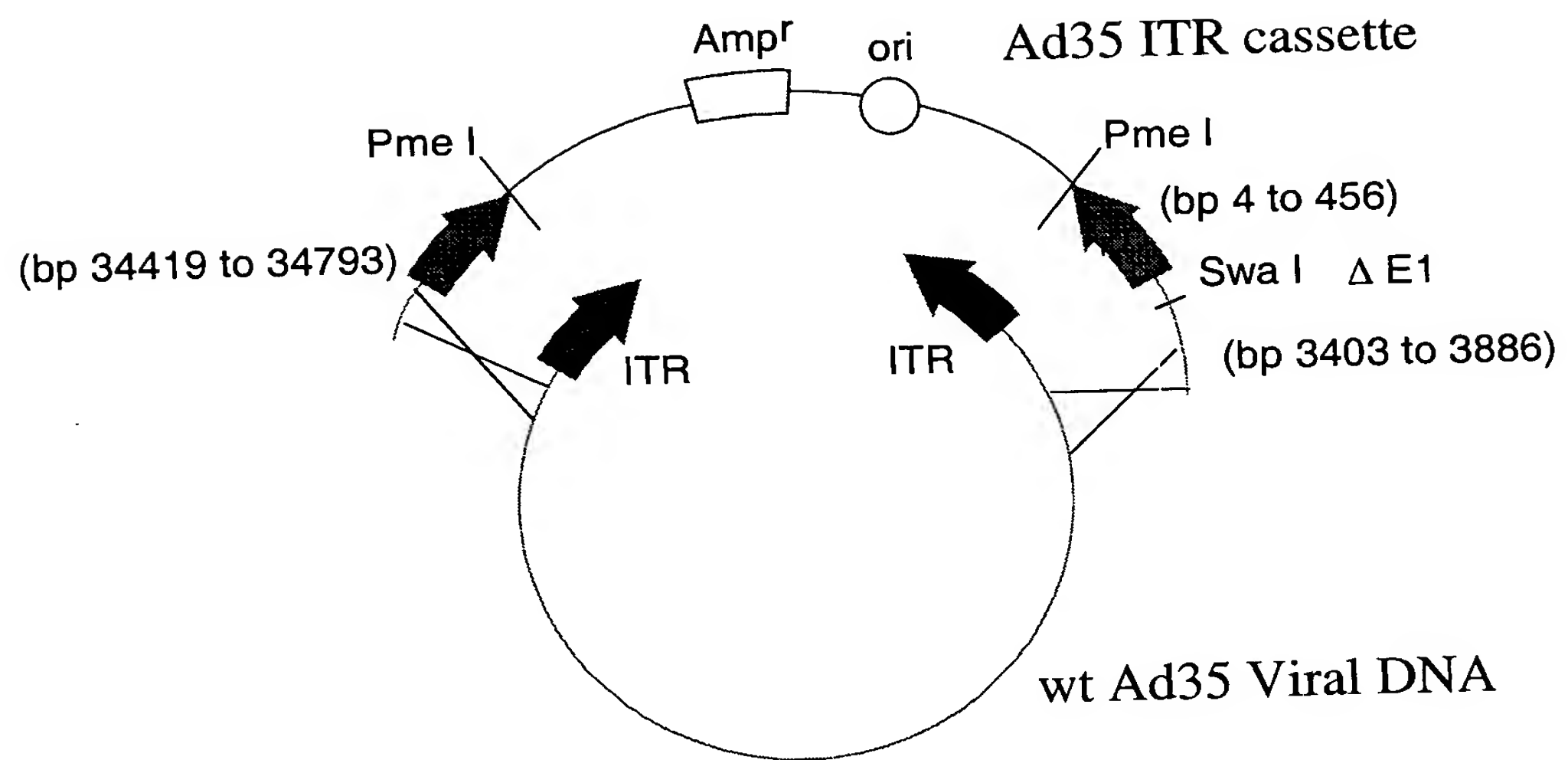
ITR   ITR

(bp 3403 to 3886)
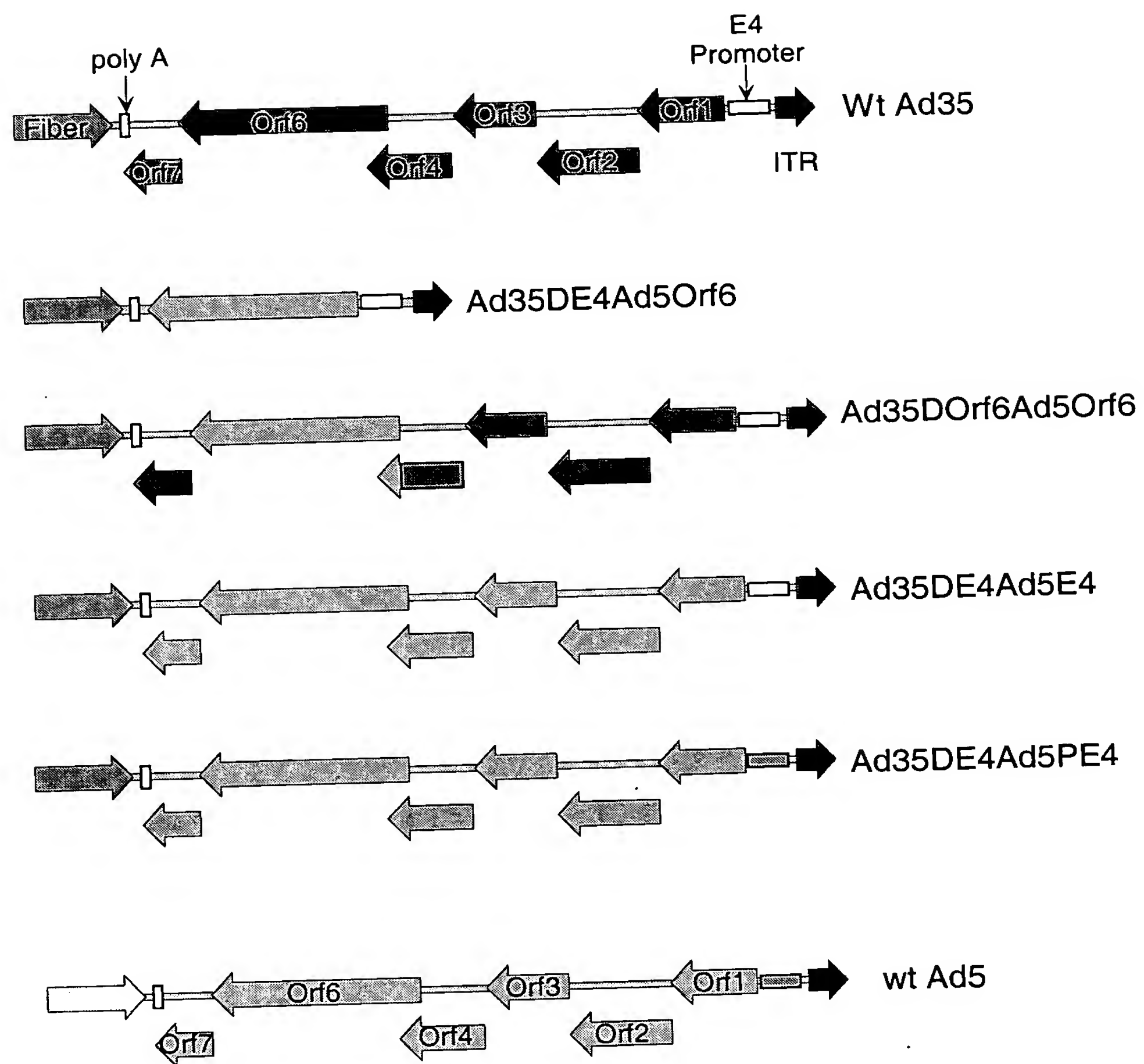
wt Ad35 Viral DNA

FIG. 5

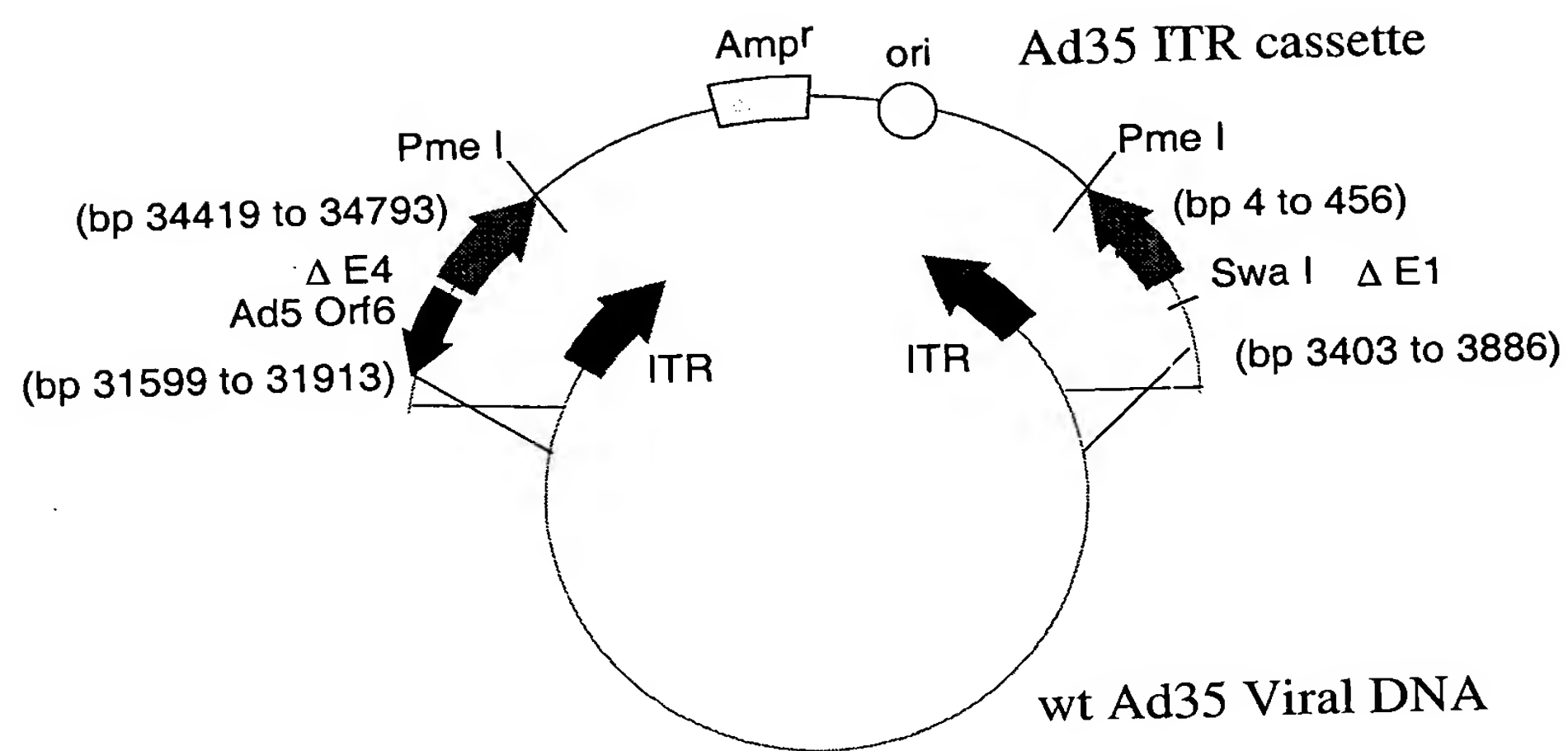
FIG. 5

```
    1 ccattgcata cgttgtatcc atatcataat atgtacattt atattggctc atgtccaaca
   61 ttaccgccat gttgacattg attattgact agttattaat agtaatcaat tacggggtca
  121 ttagttcata gcccatatat ggagttccgc gttacataac ttacggtaaa tggcccgcct
  181 ggctgaccgc ccaacgaccc ccgcccattg acgtcaataa tgacgtatgt tcccatagta
  241 acgccaatag ggactttcca ttgacgtcaa tgggtggagt atttacggta aactgcccac
  301 ttggcagtac atcaagtgta tcatatgcca agtacgcccc ctattgacgt caatgacggt
  361 aaatggcccg cctggcatta tgcccagtac atgaccttat gggactttcc tacttggcag
  421 tacatctacg tattagtcat cgctattacc atggtgatgc ggttttggca gtacatcaat
  481 gggcgtggat agcggtttga ctcacgggga tttccaagtc tccaccccat tgacgtcaat
  541 gggagtttgt tttggcacca aaatcaacgg gactttccaa aatgtcgtaa caactccgcc
  601 ccattgacgc aaatgggcgg taggcgtgta cggtgggagg tctatataag cagagctcgt
  661 ttagtgaacc gtcagatcgc ctggagacgc catccacgct gttttgacct ccatagaaga
  721 caccgggacc gatccagcct ccgcggccgg gaacggtgca ttggaacgcg gattccccgt
  781 gccaagagtg agatctaccA TGGGTGCTAG GGCTTCTGTG CTGTCTGGTG GTGAGCTGGA
  841 CAAGTGGGAG AAGATCAGGC TGAGGCCTGG TGGCAAGAAG AAGTACAAGC TAAAGCACAT
  901 TGTGTGGGCC TCCAGGGAGC TGGAGAGGTT TGCTGTGAAC CCTGGCCTGC TGGAGACCTC
  961 TGAGGGGTGC AGGCAGATCC TGGGCCAGCT CCAGCCCTCC CTGCAAACAG GCTCTGAGGA
 1021 GCTGAGGTCC CTGTACAACA CAGTGGCTAC CCTGTACTGT GTGCACCAGA GATTGATGT
 1081 GAAGGACACC AAGGAGGCCC TGGAGAAGAT TGAGGAGGAG CAGAACAAGT CCAAGAAGAA
 1141 GGCCCAGCAG GCTGCTGCTG GCACAGGCAA CTCCAGCCAG GTGTCCCAGA ACTACCCCAT
 1201 TGTGCAGAAC CTCCAGGGCC AGATGGTGCA CCAGGCCATC TCCCCCCGGA CCCTGAATGC
 1261 CTGGGTGAAG GTGGTGGAGG AGAAGGCCTT CTCCCCTGAG GTGATCCCCA TGTTCTCTGC
 1321 CCTGTCTGAG GGTGCCACCC CCCAGGACCT GAACACCATG CTGAACACAG TGGGGGGCCA
 1381 TCAGGCTGCC ATGCAGATGC TGAAGGAGAC CATCAATGAG GAGGCTGCTG AGTGGGACAG
 1441 GCTGCATCCT GTGCACGCTG GCCCCATTGC CCCCGGCCAG ATGAGGGAGC CCAGGGGCTC
 1501 TGACATTGCT GGCACCACCT CCACCCTCCA GGAGCAGATT GGCTGGATGA CCAACAACCC
 1561 CCCCATCCCT GTGGGGGAAA TCTACAAGAG GTGGATCATC CTGGGCCTGA ACAAGATTGT
 1621 GAGGATGTAC TCCCCCACCT CCATCCTGGA CATCAGGCAG GGCCCCAAGG AGCCCTTCAG
 1681 GGACTATGTG GACAGGTTCT ACAAGACCCT GAGGGCTGAG CAGGCCTCCC AGGAGGTGAA
 1741 GAACTGGATG ACAGAGACCC TGCTGGTGCA GAATGCCAAC CCTGACTGCA AGACCATCCT
 1801 GAAGGCCCTG GGCCCTGCTG CCACCCTGGA GGAGATGATG ACAGCCTGCC AGGGGGTGGG
 1861 GGGCCCTGGT CACAAGGCCA GGGTGCTGGC TGAGGCCATG TCCCAGGTGA CCAACTCCGC
 1921 CACCATCATG ATGCAGAGGG GCAACTTCAG GAACCAGAGG AAGACAGTGA AGTGCTTCAA
 1981 CTGTGGCAAG GTGGGCCACA TTGCCAAGAA CTGTAGGGCC CCCAGGAAGA AGGGCTGCTG
 2041 GAAGTGTGGC AAGGAGGGCC ACCAGATGAA GGACTGCAAT GAGAGGCAGG CCAACTTCCT
 2101 GGGCAAAATC TGGCCCTCCC ACAAGGGCAG GCCTGGCAAC TTCCTCCAGT CCAGGCCTGA
 2161 GCCCACAGCC CCTCCCGAGG AGTCCTTCAG GTTTGGGGAG GAGAAGACCA CCCCCAGCCA
 2221 GAAGCAGGAG CCCATTGACA AGGAGCTGTA CCCCCTGGCC TCCCTGAGGT CCCTGTTTGG
 2281 CAACGACCCC TCCTCCCAGT AAaataaagc ccgggcagat ctgatctgct gtgccttcta
 2341 gttgccagcc atctgttgtt tgcccctccc ccgtgccttc cttgaccctg gaaggtgcca
 2401 ctcccactgt cctttcctaa taaaatgagg aaattgcatc gcattgtctg agtaggtgtc
 2461 attctattct ggggggtggg gtggggcagc acagcaaggg ggaggattgg gaagacaata
 2521 gcaggcatgc tggggatgcg gtgggctcta
SEQ ID NO: 2
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FIG. 6

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    1 ccattgcata cgttgtatcc atatcataat atgtacattt atattggctc atgtccaaca
   61 ttaccgccat gttgacattg attattgact agttattaat agtaatcaat tacggggtca
  121 ttagttcata gcccatatat ggagttccgc gttacataac ttacggtaaa tggcccgcct
  181 ggctgaccgc ccaacgaccc ccgcccattg acgtcaataa tgacgtatgt tcccatagta
  241 acgccaatag ggactttcca ttgacgtcaa tgggtggagt atttacggta aactgcccac
  301 ttggcagtac atcaagtgta tcatatgcca agtacgcccc ctattgacgt caatgacggt
  361 aaatggcccg cctggcatta tgcccagtac atgaccttat gggactttcc tacttggcag
  421 tacatctacg tattagtcat cgctattacc atggtgatgc ggttttggca gtacatcaat
  481 gggcgtggat agcggtttga ctcacgggga tttccaagtc tccaccccat tgacgtcaat
  541 gggagtttgt tttggcacca aaatcaacgg gactttccaa aatgtcgtaa caactccgcc
  601 ccattgacgc aaatgggcgg taggcgtgta cggtgggagg tctatataag cagagctcgt
  661 ttagtgaacc gtcagatcgc ctggagacgc catccacgct gttttgacct ccatagaaga
  721 caccgggacc gatccagcct ccgcggccgg gaacggtgca ttggaacgcg gattccccgt
  781 gccaagagtg agatcgatct aagtaagctt CCTGCATGCT GCTGCTGCTG CTGCTGCTGG
  841 GCCTGAGGCT ACAGCTCTCC CTGGGCATCA TCCCAGTTGA GGAGGAGAAC CCGGACTTCT
  901 GGAACCGCGA GGCAGCCGAG GCCCTGGGTG CCGCCAAGAA GCTGCAGCCT GCACAGACAG
  961 CCGCCAAGAA CCTCATCATC TTCCTGGGCG ATGGGATGGG GGTGTCTACG GTGACAGCTG
 1021 CCAGGATCCT AAAAGGGCAG AAGAAGGACA AACTGGGGCC TGAGATACCC CTGGCCATGG
 1081 ACCGCTTCCC ATATGTGGCT CTGTCCAAGA CATACAATGT AGACAAACAT GTGCCAGACA
 1141 GTGGAGCCAC AGCCACGGCC TACCTGTGCG GGGTCAAGGG CAACTTCCAG ACCATTGGCT
 1201 TGAGTGCAGC CGCCCGCTTT AACCAGTGCA ACACGACACG CGGCAACGAG GTCATCTCCG
 1261 TGATGAATCG GGCCAAGAAA GCAGGGAAGT CAGTGGGAGT GGTAACCACC ACACGAGTGC
 1321 AGCACGCCTC GCCAGCCGGC ACCTACGCCC ACACGGTGAA CCGCAACTGG TACTCGGACG
 1381 CCGACGTGCC TGCCTCCGCC CGCCAGGAGG GGTGCCAGGA CATCGCTACG CAGCTCATCT
 1441 CCAACATGGA CATTGACGTG ATCCTAGGTG GAGGCCGAAA GTACATGTTT CGCATGGGAA
 1501 CCCCAGACCC TGAGTACCCA GATGACTACA GCCAAGGTGG GACCAGGCTG GACGGGAAGA
 1561 ATCTGGTGCA GGAATGGCTG GCGAAGCGCC AGGGTGCCCG GTATGTGTGG AACCGCACTG
 1621 AGCTCATGCA GGCTTCCCTG GACCCGTCTG TGACCCATCT CATGGGTCTC TTTGAGCCTG
 1681 GAGACATGAA ATACGAGATC CACCGAGACT CCACACTGGA CCCCTCCCTG ATGGAGATGA
 1741 CAGAGGCTGC CCTGCGCCTG CTGAGCAGGA ACCCCCGCGG CTTCTTCCTC TTCGTGGAGG
 1801 GTGGTCGCAT CGACCATGGT CATCATGAAA GCAGGGCTTA CCGGGCACTG ACTGAGACGA
 1861 TCATGTTCGA CGACGCCATT GAGAGGGCGG GCCAGCTCAC CAGCGAGGAG GACACGCTGA
 1921 GCCTCGTCAC TGCCGACCAC TCCCACGTCT TCTCCTTCGG AGGCTACCCC CTGCGAGGGA
 1981 GCTCCATCTT CGGGCTGGCC CCTGGCAAGG CCCGGGACAG GAAGGCCTAC ACGGTCCTCC
 2041 TATACGGAAA CGGTCCAGGC TATGTGCTCA AGGACGGCGC CCGGCCGGAT GTTACCGAGA
 2101 GCGAGAGCGG GAGCCCCGAG TATCGGCAGC AGTCAGCAGT GCCCCTGGAC GAAGAGACCC
 2161 ACGCAGGCGA GGACGTGGCG GTGTTCGCGC GCGGCCCGCA GGCGCACCTG GTTCACGGCG
 2221 TGCAGGAGCA GACCTTCATA GCGCACGTCA TGGCCTTCGC CGCCTGCCTG GAGCCCTACA
 2281 CCGCCTGCGA CCTGGCGCCC CCCGCCGGCA CCACCGACGC CGCGCACCCG GGTTAAcccg
 2341 tggtccccgc gttgcttcct ctgctggccg ggacatcagg tggcccccgc tgaattggaa
 2401 tcgatcagaa ttgatctgat ctgctgtgcc ttctagttgc cagccatctg ttgtttgccc
 2461 ctcccccgtg ccttccttga ccctggaagg tgccactccc actgtccttt cctaataaaa
 2521 tgaggaaatt gcatcgcatt gtctgagtag gtgtcattct attctggggg gtggggtggg
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 2641 ctcta
SEQ ID NO: 3
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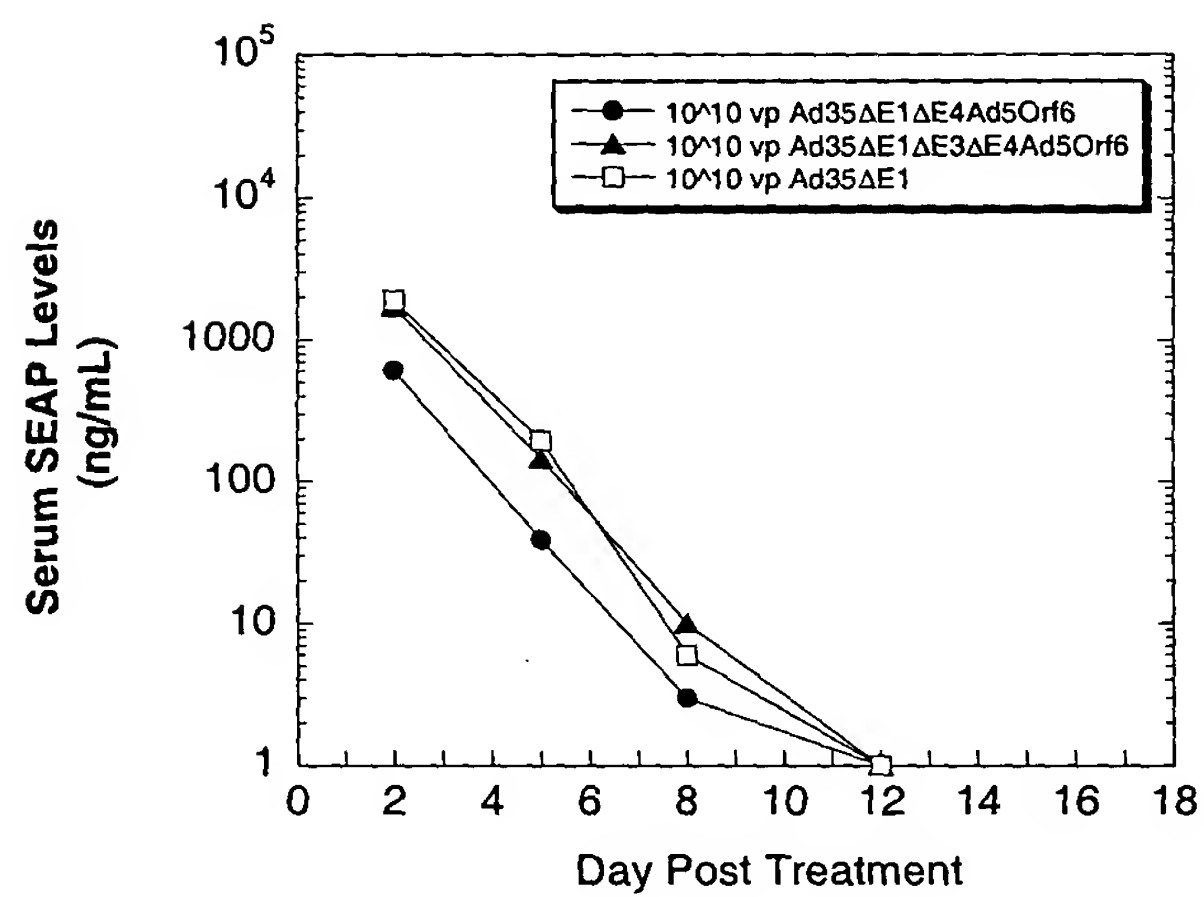
FIG. 7

FIG. 8
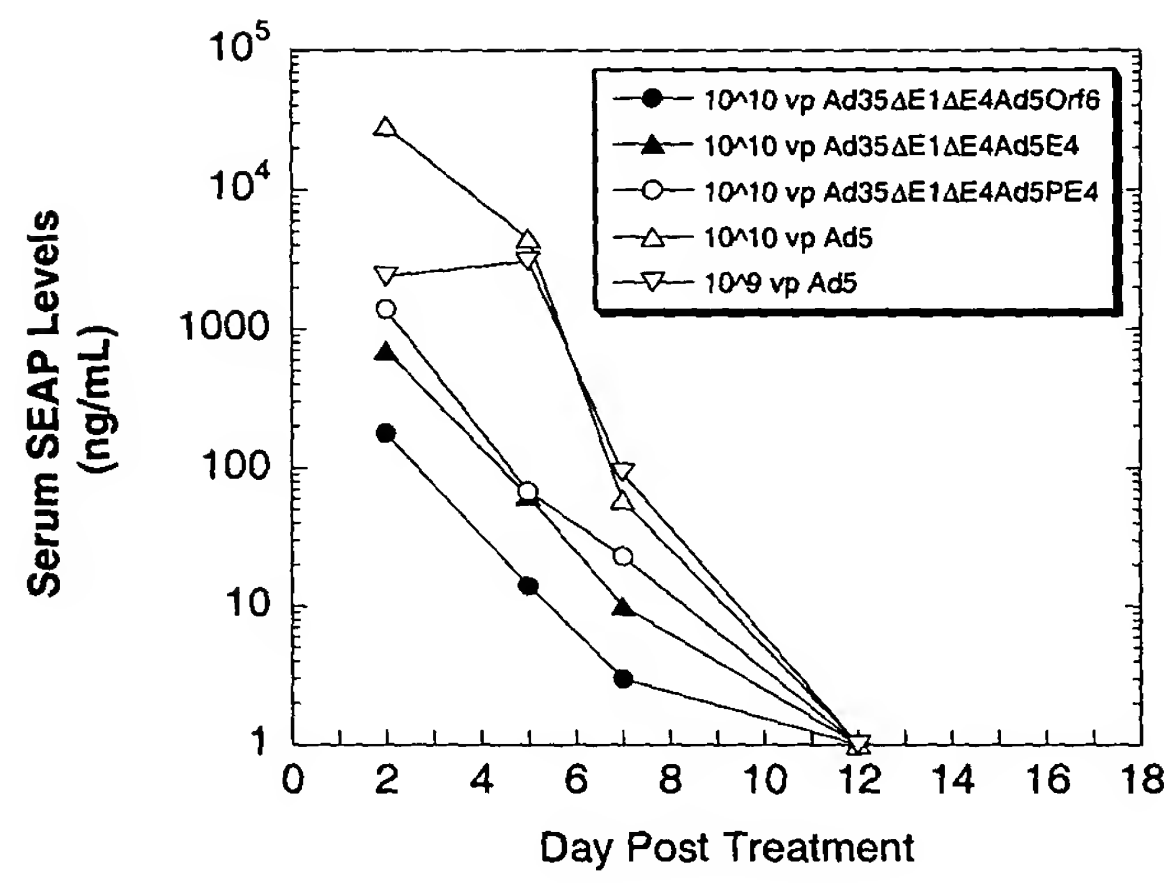
FIG. 9

FIG. 10A-B

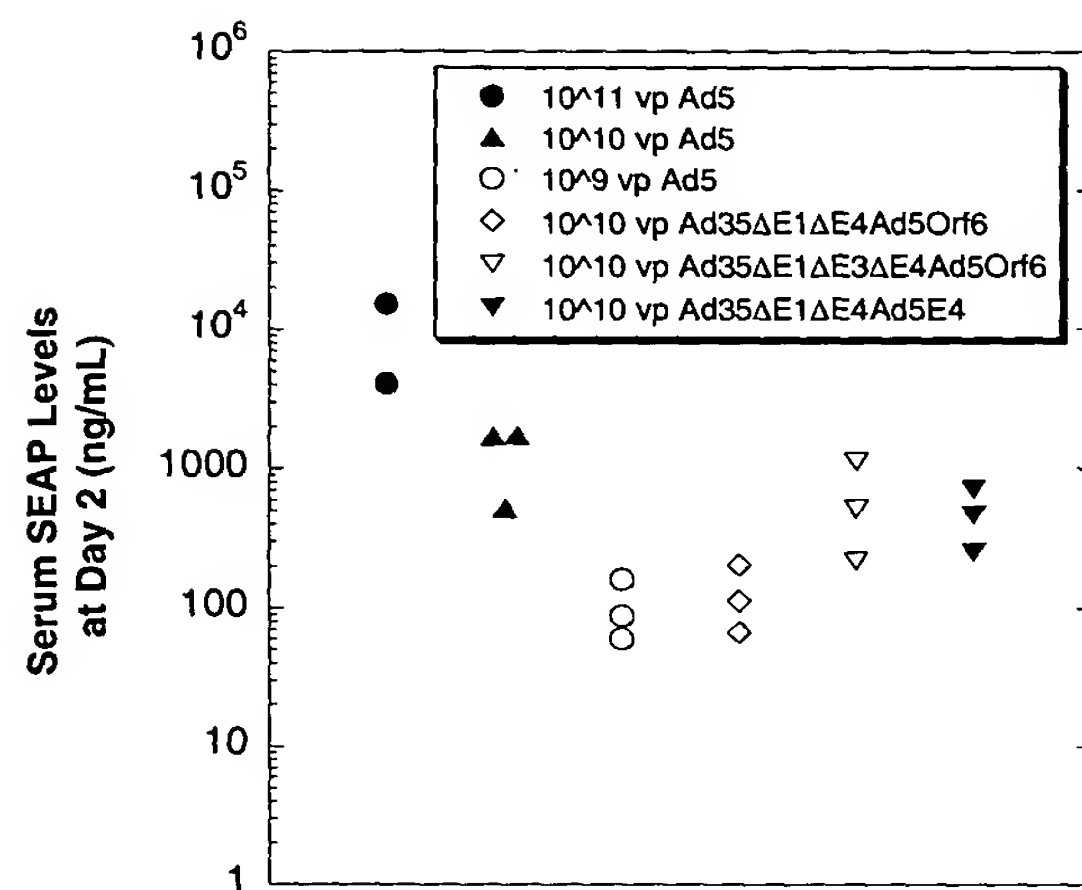FIG. 11

Amp^r ori   Ad17 ITR cassette

RE

RE

ΔE1 (bp 415 to 3372)

ITR

ITR

wt Ad24 Viral DNA

FIG. 12

Ampr ori

Ad17 E1 shuttle plasmid

ITR ITR Δ E1 (bp 415 to 3372)
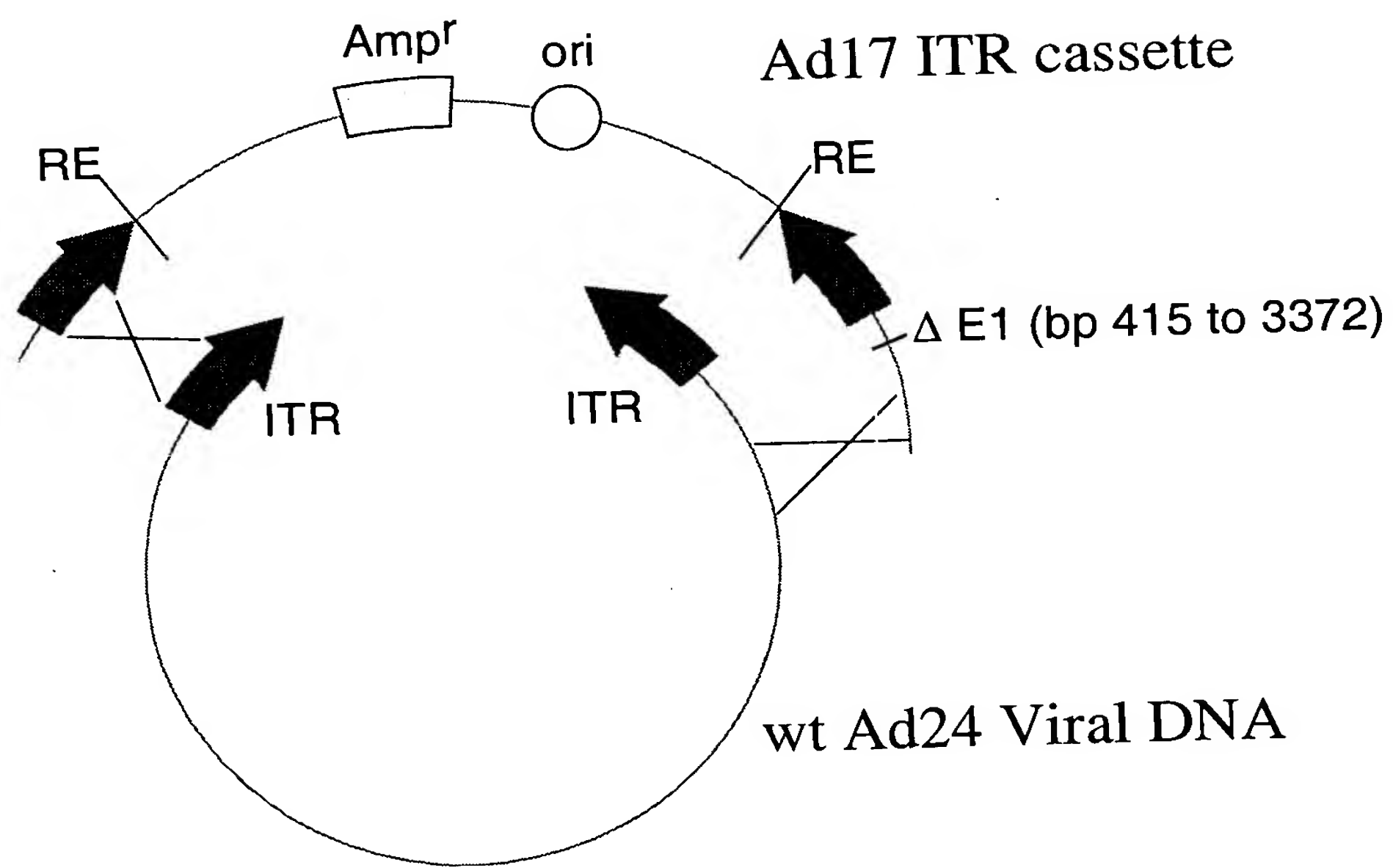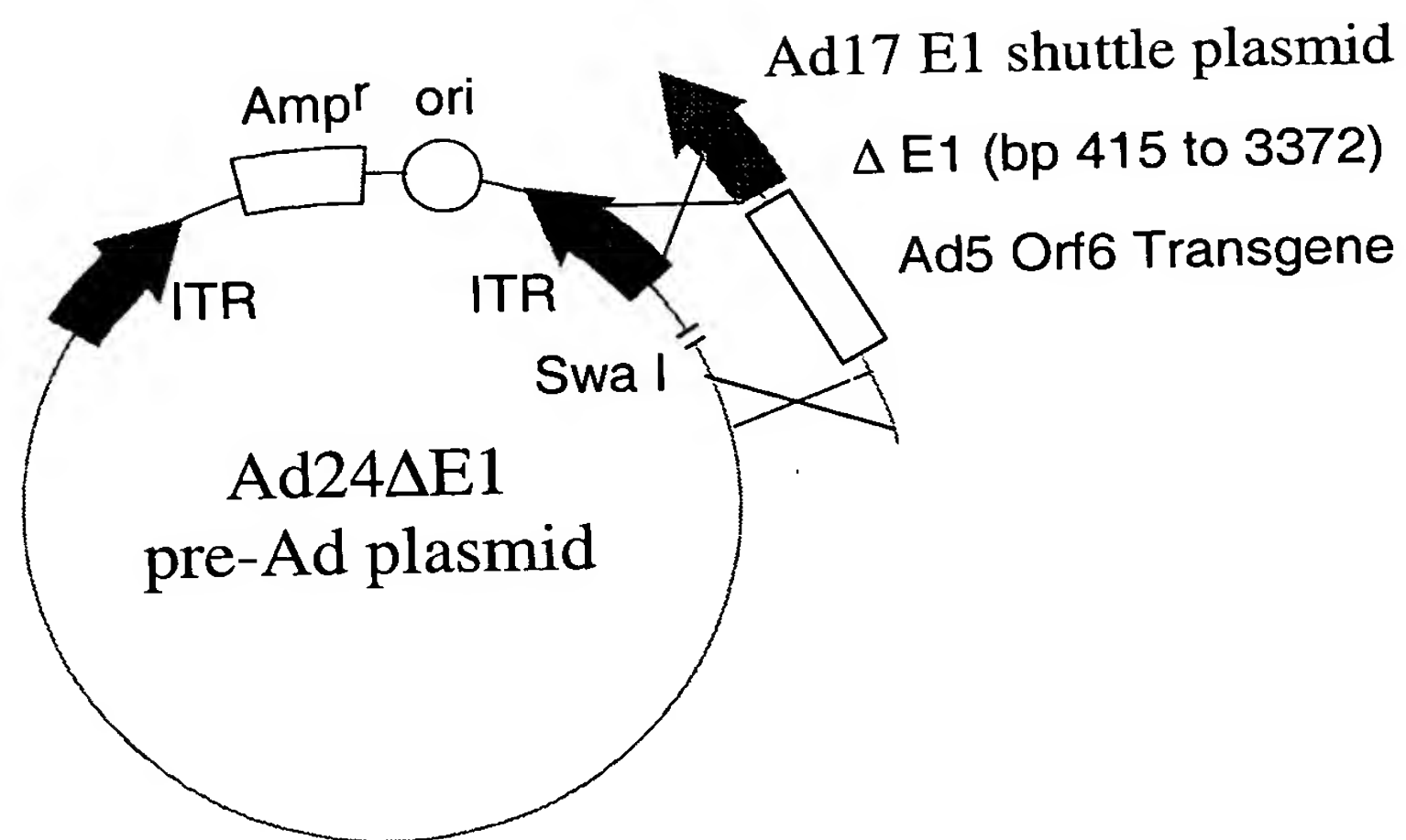
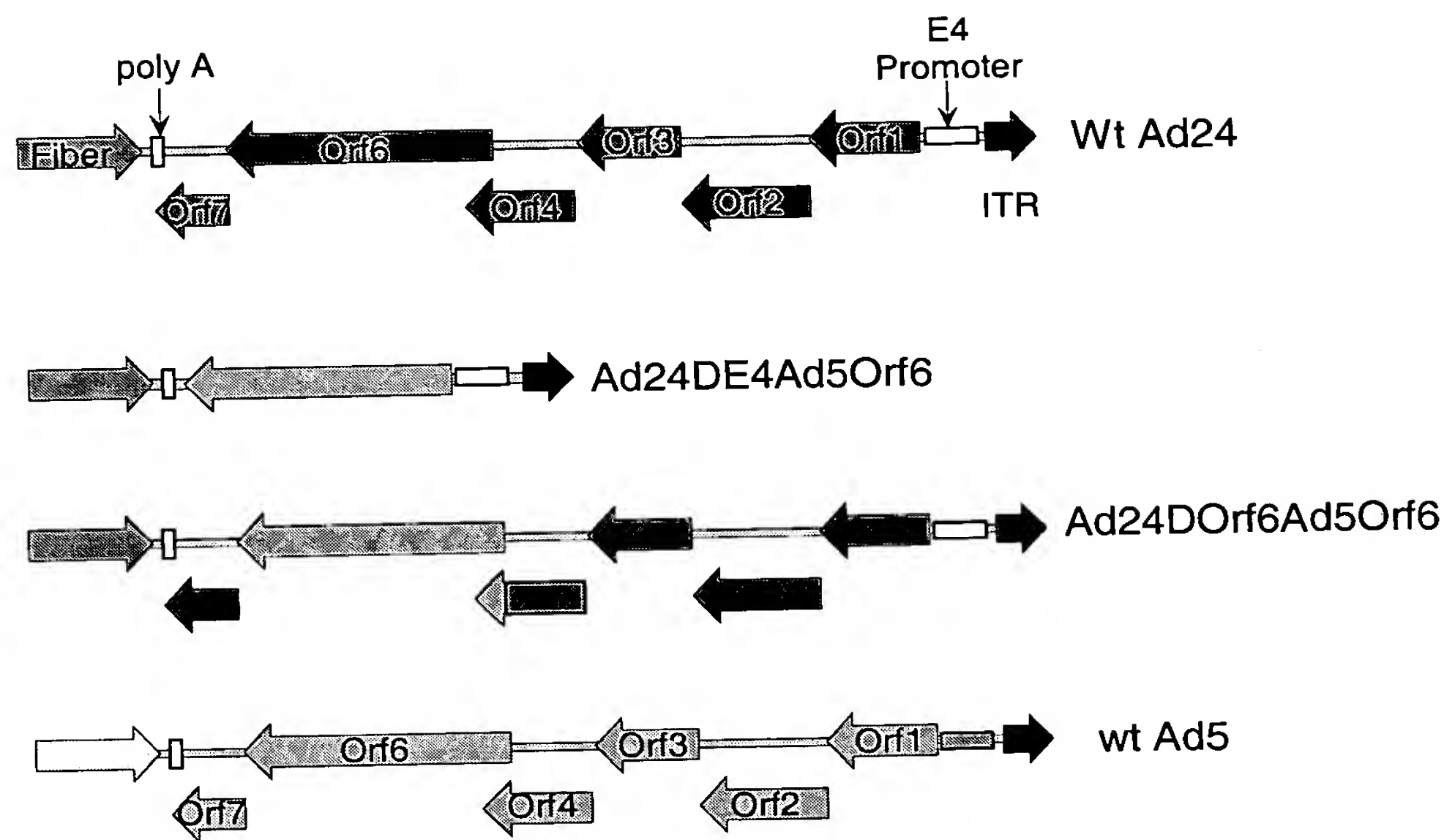Swa I Ad5 Orf6 Transgene

Ad24ΔE1
pre-Ad plasmid
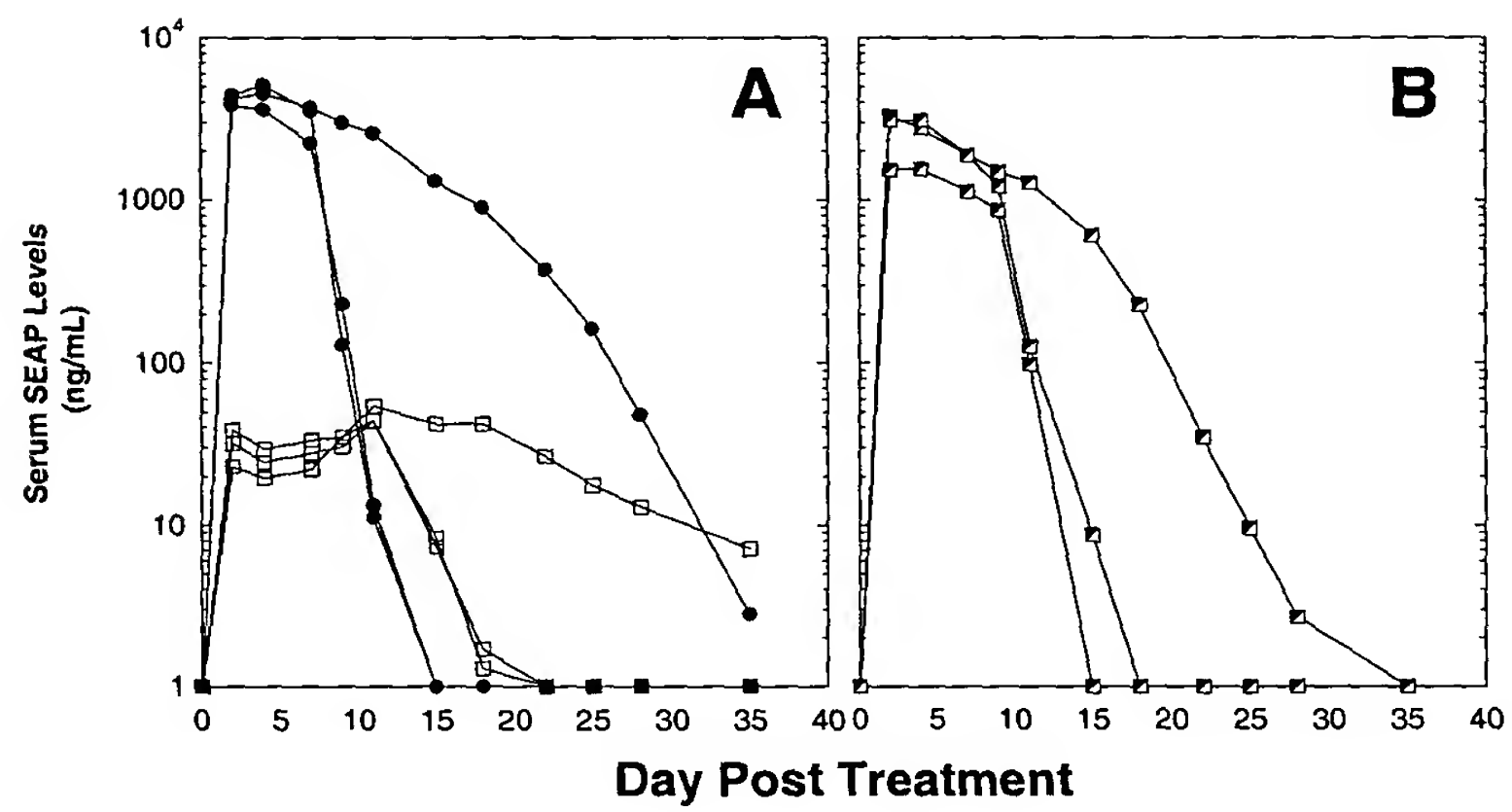
FIG. 13

FIG. 14

Growth Curve Comparison of
Ad24 Based Vectors

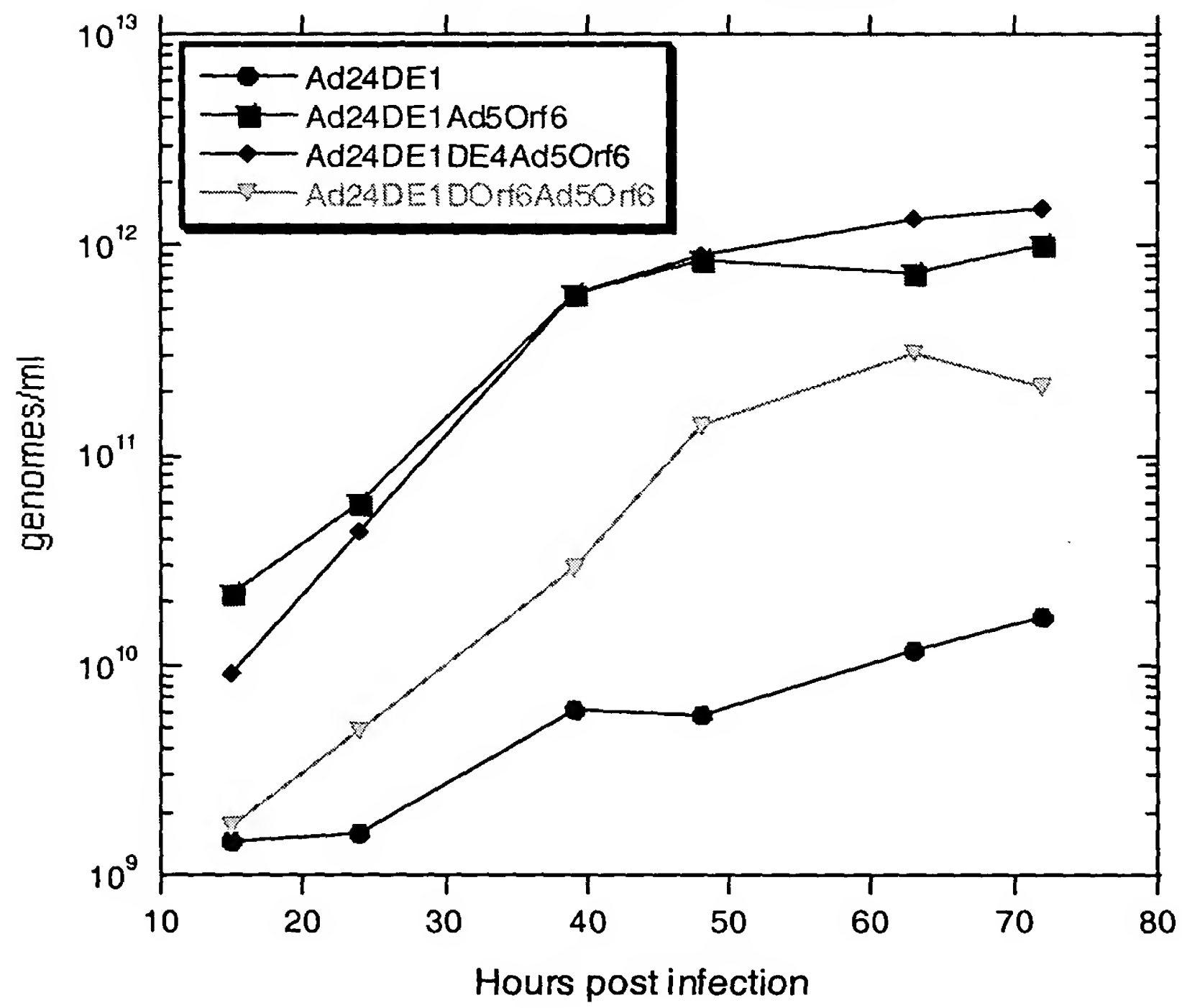FIG. 15

```
   1 catcatcaat aatatacccc acaaagtaaa caaaagttaa catgcaaatg agcttttgaa
  61 tttagggcgg ggccagcgct gattggacga gagaagatga tgcaaatgac gtcacgacgc
 121 acggctaacg gtcgccgcgg aggcgtggcc tagcccggaa gcaagtcgcg gggctgatga
 181 cgtataaaaa agcggacttt agacccggaa acggccgatt ttcccgcggc cacgcccgga
 241 tatgaggtaa ttctgggcgg atgcaagtaa aattaggtca ttttggcgcg aaaactgaat
 301 gaggaagtga aaagtgaaaa ataccggtcc cgcccagggc ggaatattta ccgagggccg
 361 agagactttg accgattacg tggggtttc gattgcggtg tttttcgcg aatttccgcg
 421 tccgtgtcaa agtccggtgt ttatgtcaca gatcagctga tccacagggt atttaaacca
 481 gtcgagcccg tcaagaggcc actcttgagt gccagcgagt agagatttct ctgagctccg
 541 ctcccagagt ctgagaaaaa tgagacacct gcgcctcctt tcttcaactg tgcctattga
 601 catggccgca ttattgctgg aggattatgt gagtacaata ttggaggacg aactgcatcc
 661 atctccattt gagctgggac ctacacttca ggacctatat gatttggagg tagatgccca
 721 tgatgacgac ccgaacgaag aggctgtgaa tttaatattt ccagaatctc tgattcttca
 781 ggctgacata gccagcgaag ctgtacctac accacttcat acaccgactc tgtcacccat
 841 acctgaattg gaagaggagg acgagctaga cctccgatgt tatgaggaag gttttcctcc
 901 cagcgattca gaggacgaac agggtgagca gagcatggct ctaatctcaa aatatgcttg
 961 tgtggttgtg gaagagcatt ttgtgttgga caatcctgag gtgcccgggc aaggctgtag
1021 atcctgccag taccaccggg ataagaccgg agacacgaac gcctcctgcg ctctgtgtta
1081 catgaaaaag aacttcagct ttatttacag taagtggagt gaatgtgaga gagactgagt
1141 gcttaacaca taactgggta atgcttaaac agctgtgcta agtgtggttt attttgttt
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1381 cctttggacc tgagcttgaa acgccccagg aactaggctc agctgtgctt agtcatgtgt
1441 aaataaagtt gtacaataaa agtatatgtg acgcatgcaa ggtgtggttt atgactcatg
1501 ggcgtggctt agtcctatat aagtggcaac acctgggcac tggggcacag accttcaggg
1561 agttcctgat ggatgtgtgg actatccttg cagactttag caagacacgc cggcttgtag
1621 aggatagttc agacgggtgc tccgggttct ggagacactg gtttggaact cctctatctc
1681 gtctggtgta cacagttaag aaggattata acgaggaatt tgaaaatctt tttgctgatt
1741 gctctggcct gctagattct ctaaatctcg gccaccagtc ccttttccag gaaagggtac
1801 tccacagcct tgattttca agcccagggc gcactacagc cggggttgct tttgtggttt
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2341 aaaaacccac tggttgaacc cagatgagga ttgggaggag gccattaaga aatatgccaa
2401 gatagccctg cgcccagatt gcaagtacag ggtgaccaag acggtgaata tcagacatgc
2461 ctgctacatc tcggggaacg gggcagaggt ggtcatcgat accctggaca aggccgcctt
2521 caggtgttgc atgatgggaa tgagagccgg agtgatgaat atgaattcca tgattttcat
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2701 tgctaagatc aggggatgta agttttatgg ctgctggatg ggcgtggtcg gaagacccaa
2761 gagcgagatg tctgtgaagc agtgtgtgtt tgagaaatgc tacctgggag tctctaccga
2821 gggcaatgct agagtgagac attgctcttc cctggagacg ggctgcttct gcctggtgaa
2881 gggcacagcc tctctgaagc ataatatggt gaagggctgc acggatgagc gcatgtacaa
2941 catgctgaca tgcgactcgg gggtctgcca tatcctgaag aacatccatg tgacctccca
3001 cccccggaag aagtggccag tgtttgagaa taacctactg atcaagtgcc acatgcacct
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3361 gaggtaggtt gagtattagt gggcgtggct aaggtgacta taaaggcggg tgtcttacga
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3481 cttttagcc cttatttgac aacccgcctg ccgggatggg ccggagttcg tcagaatgtg
3541 atgggatcga cggtggacgg gcgtccagtg cttccagcaa attcctcgac catgacctac
3601 gcgaccgtgg ggaactcgtc gctcgacagc accgccgcag ccgcggcagc cgcagccgcc
```

FIG. 16A-1

```
3661  atgacagcga  cgagactggc  ttcgagctac  atgcccagca  gcagcagtag  cccctctgtg
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3781  agccgccagc  tggccgccct  gacccagcag  gtgtccgagc  tccgcgaaca  gcagcagcag
3841  caaaataaat  gattcaataa  acacagattc  tgattcaaac  agcaaagcat  ctttattatt
3901  tattttttcg  cgcgcggtag  gccctggtcc  acctctcccg  atcattgaga  gtgcggtgga
3961  tttttttccag  gacccggtag  aggtgggatt  ggatgttgag  gtacatgggc  atgagcccgt
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6481  gttgaggggc  ggacccagg  gcatgggatg  cgtcagggcg  gaggcgtaca  tgccgcagat
6541  gtcgtagaca  tagatgggct  ccgagaggat  gccgatgtag  gtgggataac  agcgcccccc
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7201  gttaggcaga  gcgaaagtga  cgtcattgaa  gagaatcttg  cctgcccgcg  gcatgaaatt
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```

FIG. 16A-2

```
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 7441  cagtccgtgc  tgctcgagcg  cccactcctg  gagatgtggg  ttggcttgca  tgaatgaagc
 7501  ccagagctcg  cgggccataa  gggtctggag  ctcgtcgcga  aagaggcgga  actgctggcc
 7561  cacggccatc  ttttctgggg  tgacgcagta  gaaagtaagg  gggtcccgct  cccagcgatc
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 8461  cggttgacat  cctggatctg  ccgcctctgc  gtgaagacca  ccggccccgt  gactttgaac
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 9781  gtgtcctgga  agtcgtccat  gtcgacgaag  cggtggtagg  ccccggtgtt  gatggtgtag
 9841  gtgcagttgg  ccatgagcga  ccagttgacg  gtctgcaggc  cgggttgcac  gacctctgag
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 9961  tactggtatc  caactaggaa  gtgcggcggc  ggctggcggt  agagcggcca  gcgctgggtg
10021  gccggcgcgc  ccggggccag  gtcctcgagc  atgaggcggt  ggtagccgta  gaggtagcgg
10081  gacatccagg  tgatgccggc  ggcggtggtg  gaggcgcgcg  ggaactcgcg  gacgcggttc
10141  cagatgttgc  gcagcggcag  gaaatagtcc  atggtcggca  cggtctggcc  ggtgagacgc
10201  gcgcagtcat  tgacgctcta  gaggcaaaaa  cgaaagcggt  tgagcgggct  cttcctccgt
10261  agcctggcgg  aacgcaaacg  ggttaggccg  cgtgtgtacc  ccggttcgag  tcccctcgaa
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10561  ccgatttaaa  gacccacagc  cagccgactt  ctccagttac  gggagcgagc  cccctttttt
10621  cttttttgcca  gatgcatccc  gtcctgcgcc  aaatgcgtcc  caccccccct  ccggcgacca
10681  ccgcgaccgc  ggccgtagca  ggcgccggcg  ctgtagcccc  gccacagcag  acagagatgg
10741  acttggaaga  gggcgaaggg  ctggcgagac  tggggcgcc  gtccccggag  cgacaccccc
10801  gcgtgcagct  gcagaaggac  gtgcgcccgg  cgtacgtgcc  tgcgcagaac  ctgttcaggg
10861  accgcagcgg  ggaggagccc  gaggagatgc  gcgactgccg  ttttcgggcg  ggcagggagc
10921  tgcgcgaggg  cctggaccgc  cagcgcgtgc  tgcgcgacga  ggatttcgag  ccgaacgagc
```

FIG. 16A-3

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10981 agacgggat cagccccgcg cgcgcgcacg tggcggcggc caacctggtg acggcctacg
11041 agcagacggt gaagcaggag cgcaacttcc aaaagagttt caacaaccat gtgcgcacgc
11101 taatcgcgcg cgaggaggtg gccctgggct tgatgcacct gtgggacctg gcggaggcca
11161 tcgtgcagaa cccggacagc aagcctctga cggcgcagct gttcctggtg gtgcagcaca
11221 gcagggacaa cgaggcgttc agggaggcgc tgctaaacat cgccgagccc gagggccgct
11281 ggctgctgga gctgatcaac atcttgcaga gcatcgtagt gcaggagcgc agcctgagcc
11341 tggccgagaa ggtggcggct atcaactact cggtgctgag cctgggcaag ttttacgcgc
11401 gcaagattta caagacgccg tacgtgccca tagacaagga ggtgaagata gacagctttt
11461 acatgcgcat ggcgctcaag gtgctgacgc tgagcgacga cctgggcgtg taccgcaacg
11521 accgcatcca caaggccgtg agcgcgagcc ggcggcgcga gctgagcgac cgcgagctga
11581 tgctgagtct gcgccgggcg ctggtagggg gcgccgccgg cggtgaggag tcctacttcg
11641 acatgggggc ggacctgcat tggccagccga gccggcgcgc cttgagcgcc gcctacggtc
11701 cagaggactt ggatgaggat gaggaagagg aggaggatgc acccgctgcg gggtactgac
11761 gcctccgtga tgtgttttta gatgcagcaa gccccggacc ccgccataag ggcggcgctg
11821 caaagccagc cgtccggtct agcatcggac gactgggagg ccgcgatgca acgcatcatg
11881 gccctgacga cccgcaaccc cgagtccttt agacaacagc cgcaggccaa cagactctcg
11941 gccattctgg aggcggtggt cccctctcgg accaacccca cgcacgagaa ggtgctggcg
12001 atcgtgaacg cgctggcgga gaacaaggcc atccgtcccg acgaggccgg gctggtgtac
12061 aacgccctgc tggagcgcgt gggccgctac aacagcacaa acgtgcagtc caacctggac
12121 cggctggtga cggacgtgcg cgaggccgtg gcgcagcgcg agcggttcaa gaacgagggc
12181 ctgggctcgt tggtggcgct gaacgccttc ctggcgacgc agccggcgaa cgtgccgcgc
12241 gggcaggacg attacaccaa cttttatcagc gcgctgcggc tgatggtgac cgaggtgccc
12301 cagagcgagg tgtaccagtc gggcccagac tactttttcc agacgagccg gcagggcttg
12361 cagacggtga acctaagcca ggctttcaag aatctgcgcg ggctgtgggg cgtgcaggcg
12421 cccgtgggcg accggtcgac ggtgagcagc ttgctaacgc ccaactcgcg gctgctgctg
12481 ctgctgatcg cgcccttcac cgacagcggc agcgtgaacc gcaactcgta cctgggccac
12541 ctgctgacgc tttaccgcga ggccataggc caggcgcagg tggacgagca gaccttccag
12601 gagatcacta gcgtgagccg cgcgctgggt cagaacgaca ccgacagtct gagagccacc
12661 ctgaacttct tgctgacaaa tagacagcag aagattccgg cgcagtacgc gctgtcggcc
12721 gaggaggagc gcatcctgag atatgtgcag cagagcgtag ggcttttcct gatgcaggag
12781 ggggccaccc ccagcgccgc gctggacatg accgcgcgca acatggaacc tagcatgtac
12841 gccgccaacc ggccgttcat caataagctg atggactacc tgcaccgcgc ggctgccatg
12901 aactcggact actttactaa tgctatacta aacccgcact ggctcccgcc gccggggttc
12961 tacacgggcg agtacgacat gcccgacccc aacgatgggt tcctgtggga cgacgtggac
13021 agcgcggtgt tctccccgac cttgcaaaag cgccaggagg cggtacgcac gcccgcgagc
13081 gagggcgcgg tgggtcggag ccccctttcct agcttaggga gtttgcatag cttgccgggc
13141 tcggtgaaca gcggcagggt gagccggccg cgcttgctgg gcgaggacga gtacctgaac
13201 gactcgctgc tgcagccgcc gcgggtcaag aacgccatgg ccaataacgg gatagagagt
13261 ctggtggaca aactgaaccg ctggaagacc tacgctcagg accataggga tgcgcccgcg
13321 ccgcggcgac agcgccacga ccggcagcgg ggcctggtgt gggacgacga ggactcggcc
13381 gacgatagca gcgtgttgga cttgggcggg agcggtgggg ccaacccgtt cgcgcatctg
13441 cagcccagac tggggcgacg gatgtttttga atgaaataaa actcaccaag gccatagcgt
13501 gcgttctctt ccttgttaga gatgaggcgc gcggtggtgt cttcctctcc tcctccctcg
13561 tacgagagcg tgatggcgca ggcaaccctg gaggttccgt ttgtgcctcc gcggtatatg
13621 gctcctacgg agggcagaaa cagcattcgt tactcggaac tggctccgca gtacgacacc
13681 actcgcgtgt acttggtgga caacaagtcg gcggacatcg cttccctgaa ctaccaaaac
13741 gaccacagca acttcctgac cacggtggtg cagaacaacg atttcaccco cgccgaggcc
13801 agcacgcaga cgataaattt tgacgagcgg tcgcggtggg gcggtgattt gaagaccatt
13861 ctgcacacca acatgcccaa tgtgaacgag tacatgttca ccagcaagtt taaggcgcgg
13921 gtgatggtgg ctaggaaggt ggtagatcag aatgatagga gcaaggatga gttaaaatat
13981 gagtggtttg agtttacct gcccgagggc aacttttccg agaccatgac catagacctg
14041 atgaacaacg ccatcttgga aaactacttg caagtggggc ggcaaaatgg cgtgctggag
14101 agcgatatcg gagtcaagtt tgacagcagg aatttcaagc tgggctggga cccggtaacc
14161 aagctggtga tgcctggggt ctacacctac gaggccttcc acccggacgt tgtgctgctg
14221 ccgggctgcg gggtggactt caccgagagc cgcctgagca acctcctggg cattcgcaag
14281 aagcaacctt ccaagaggg cttcaggatc atgtatgagg atctcgaggg tggtaacatc
14341 cccgcccctc tggatgtcaa gcaatatttg gatagtaaaa agaagcttga ggaggcaaca
14401 cagaatgcaa ccaggctgc tggagatatc agaggagaca gtcatattcc aagagctgtg
14461 gaacaagcgg ctgaaaagga tctggtcatt gtaccagtaa cacaagatga aagtaagaga
14521 agctataatg tcatagatgg cacccatgac accctctacc gaagttggta cctgtcctat
14581 acctacgggg accccgagaa gggggtgcag tcgtggacgc tgctcaccac cccggacgtc
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14641 acctgcggcg cggagcaagt ctactggtcg ctgccggacc tcatgcaaga ccccgtcacc
14701 ttccgctcta cccagcaagt cagcaactac cccgtggttg gcgccgagct catgcccttc
14761 cgcgccaaga gcttttacaa cgacctcgcc gtctactccc agctcatccg cagctacacc
14821 tccctcaccc acgtcttcaa ccgcttcccc gacaaccaga tcctctgccg tccgcccgcg
14881 cccaccatca ccacggtcag tgaaaacgtg cctgctctca cagatcacgg gacgctaccg
14941 ctgcgcagca gtatccgcgg agtccagcga gtgaccgtca ctgacgcccg tcgccgcacc
15001 tgtccctacg tctacaaggc cctgggcata gtcgcgccgc gcgtgctttc cagtcgcacc
15061 ttctaaaaaa tgtctattct catctcgccc agcaataaca ccggctgggg tcttactagg
15121 cccagcacca tgtacggagg agccaagaag cgctcccagc agcaccccgt ccgcgtccgc
15181 ggccacttcc gcgctccctg gggcgcttac aagcgcgggc ggacttctac cgccgccgtg
15241 cgcaccaccg tcgacgacgt catcgactcg gtggtcgccg acgcgcgcaa ctataccccc
15301 gcccctcca ccgtggacgc ggtcatcgac agcgtggtgg ccgacgcgcg cgactatgcc
15361 agacgcaaga gccggcggcg acggatcgcc aggcgccacc ggagtacgcc cgccatgcgc
15421 gccgcccggg ctctgctgcg ccgcgccaga cgcacgggcc gccgggccat gatgcgagcc
15481 gcgcgccgcg ccgccactgc accccccgca ggcaggactc gcagacgagc ggccgccgcc
15541 gctgccgcgg ccatttctag catgaccaga cccaggcgcg gaaacgtgta ctgggtgcgc
15601 gactccgtca cgggcgtgcg cgtgcccgtg cgcacccgtc ctcctcgtcc ctgatctaat
15661 gcttgtgtcc tccccgcaa gcgacgatgt caaagcgcaa aatcaaggag gagatgctcc
15721 aggtcgtcgc cccggagatt tacggaccac cccaggcgga ccagaaaccc cgcaaaatca
15781 agcgggttaa aaaaaaggat gaggtggacg aggggggcagt agagtttgtg cgcgagttcg
15841 ctccgcggcg gcgcgtaaat tggaaggggc gcagggtgca gcgcgtgttg cggcccggca
15901 cggcggtggt gtttacgccc ggcgagcggt cctcggtcag gagcaagcgt agctatgacg
15961 aggtgtacgg cgacgacgac atcctggacc aggcggcgga gcgggcgggc gagttcgcct
16021 acgggaagcg gtcgccgaa gaggagctga tctcgttgcc gctggacgag agcaacccca
16081 cgcctagcct gaagcccgtg accctgccac ggtgctgcc ccaagcagtg ctgctgccga
16141 gccgcggggt caagcgcgag ggcgagaata tgtacccgac catgcagatc atggtgccca
16201 agcgccggcg cgtggaagaa gtgctggaca ccgtgaaaat ggatgtggag cccgaggtca
16261 aggtgcgccc catcaagcag gtggcgccgg gcctgggcgt gcagaccgtg gacattcaga
16321 tccccaccga catggatgtt gacaaaaaac cctcgaccag catcgaggtg cagaccgacc
16381 cctggctccc agcctccacc gctgccgtct ccacttctac cgccgccacg gctaccgagc
16441 ctcccagaag gcgaagatgg ggccctgcca accggctgat gcccaactac gtattgcatc
16501 cttccattat cccgacgccg ggctatcgcg gcacccggta ctacgccagc cgcaggcgcc
16561 cagccagcaa acgccgccgc cgcaccgcca cccgccgccg tctggccccc gcccgcgtgc
16621 gccgcgtaac cacgcgccgg ggccgctcgc tcgttctgcc caccgtgcgc taccacccca
16681 gcatccttta atccgtgtgc tgtgatactg ttgcagagag atggctctca cttgccgcct
16741 gcgcatcccc gtcccgaatt accgaggaag atcccgccgc aggagaggca tggcaggcag
16801 cggcctcaac cgccgccggc ggcgggccat gcgcaggcgc ctgagtggcg gctttctgcc
16861 cgcgctcatc cccataatcg cggcggccat cggcacgatc ccgggcatag cttccgttgc
16921 gctgcaggcg tcgcagccgc gttgatgtgc gaataaagcc tctttagact ctgacacacc
16981 tggtcctgta tattttaga atggaagaca tcaattttgc gtccctggct ccgcgccacg
17041 gcacgcggcc gttcatgggc acctggaacg agatcggcac cagccagctg aacggggcg
17101 ccttcaattg gagcagtgtc tggagcgggc ttaaaaattt cggctcgacg ctccggacct
17161 atgggaacaa ggcctggaat agtagcacgg ggcagttgtt aagggaaaag ctcaaagacc
17221 agaacttcca gcagaaggtg gtggacggcc tagcctcggg cattaacggg gtggtggaca
17281 tagcaaacca ggccgtgcag cgcgagataa acagccgcct ggaccgcgg ccgcccacgg
17341 tggtggagat ggaagatgca actcctccgc cgcccaaggg cgagaagcgg ccgcggcccg
17401 acgcggagga gacgatcctg caggtggacg agccgccctc gtacgaggag gccgtcaagg
17461 ccggcatgcc caccacgcgt atcatcgcgc cactggccac tggtgtaatg aaacccgcca
17521 cccttgacct gcctccgcca cccacgcccg ctccaccgaa ggcagctccg gttgtgcagc
17581 cccctcctgt ggcgaccgcc gtgcgccgcg tccccgcccg ccgccaggcc cagaactggc
17641 agagcacgct gcacagtatc gtgggcctgg gagtgaaaag tctgaagcgc cgccgatgct
17701 attgagagag aggaaagagg acactaaagg gagagcttaa cttgtatgtg ccttaccgcc
17761 agagaacgcg cgaagatggc tacccctcg atgatgccgc agtgggcgta catgcacatc
17821 gccggggcagg acgcctcgga gtacctgagc ccgggtctgg tgcagtttgc ccgcgccacc
17881 gacacgtact tcagcctggg caacaagttt aggaacccca cggtggctcc cacccacgat
17941 gtgaccacgg accggtccca gcgtctgacg ctgcgctttg tgcccgtgga tcgcgaggac
18001 accacgtact cgtacaaggc gcgcttcact ctggccgtgg gcgacaaccg ggtgctagac
18061 atggccagca cttactttga catccgcggc gtcctggacc gcggtcccag cttcaaaccc
18121 tactcgggca cggcttacaa cagcctggcc cccaaaggcg cccccaactc tagtcagtgg
18181 gaacaagcta aagctaccaa tgccggtcaa aaggaaactc acacatttgg agtagccgct
18241 atgggcggag aagacattac agtgaaaggt cttcaaattg gaactgatga aactaaggaa
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<div align="center">FIG. 16A-5</div>

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18301  gatggagagg atgaaatttt tgcagatcaa acattccagc cagaacctca agtgggagaa
18361  cagaactggc aagaaacgtt tgttttctat ggaggcagag ctcttaagaa agaaaccaaa
18421  atgaagccat gttatggctc ttatgcgaga cccacaaatg aaaagggagg acaggctaaa
18481  tttacacttg atgaaaaagg tcagccaacc aaaattcctg atattacaat ggatttcttt
18541  gatagtccac aagatgatac atcaggtgta actaataagc cagatattgt catgtatgca
18601  gaaaatgtaa atttagaagc tcctgacaca catgtagttt acaaaccagg caaagatgat
18661  tctagttctt ccgctaacct cacacaacag gccatgccta acagaccgaa ctacatcggg
18721  ttcagagaca actttgtggg tcttatgtac tacaatagta ctggcaacat gggtgtgctg
18781  gctggtcagg cctctcagtt gaatgctgtg gtcgacttgc aagacagaaa caccgagctg
18841  tcttaccagc tattgctaga ttctctgggt gacagaacca gatactttag catgtggaat
18901  tctgcagtgg acagctatga ccccgatgtc aggatcattg agaatcacgg tgtggaagat
18961  gaacttccaa actattgctt cccactgaat ggcagtggtt ctaacagcac atacaaaggt
19021  gttaaagctg gaactggaaa caattgggat gacgatgaaa atgttgcaag acaaaatcag
19081  attggcactg gcaacctgtt cgccatggag atcaacctcc aggccaacct atggaagagt
19141  tttctgtact cgaacgtggc cctgtacctg cccgactcct acaagtacac gccggccaac
19201  gtcacgctgc ccaccaacac caacacctac gactacatga acggccgcgt ggtagccccc
19261  tcgctggtgg acgcctacat caacattggc gcccgctggt cgctggaccc catggacaat
19321  gtcaatccct caaccacca ccgcaacgcg ggcctgcgct accgctccat gctcctgggc
19381  aacggccgct acgtgccctt ccacatccaa gtgccccaaa agttctttgc catcaagaac
19441  ctgcttctgc tccccggttc ctacacctac gagtggaact tccgcaagga cgtcaacatg
19501  atcctgcaga gttccctcgg caacgacctg cgcgtcgacg gcgcctccgt ccgcttcgac
19561  agcgtcaacc tctacgccac cttcttcccc atggcgcaca acaccgcctc caccctggaa
19621  gccatgctgc gcaacgacac caacgaccag tccttcaacg actacctctc ggccgccaac
19681  atgctctacc ccatcccggc caaggccacc aacgtgccca tctccatccc ctcgcgcaac
19741  tgggccgcct ccgcggctg gagtttcacc cggctcaaga ccaaggaaac tccctccctc
19801  ggctcgggtt tcgaccccta ctttgtctac tcgggctcca tcccctacct cgacgggacc
19861  ttctaccotca accacacctt caagaaggtc tccatcatgt tcgactcctc ggtcagctgg
19921  cccggcaacg accggctgct cacgccgaac gagttcgaga tcaagcgcag cgttgacggg
19981  gagggctaca acgtggccca atgcaacatg accaaggact ggttcctcgt ccagatgctc
20041  tcccactaca acatcggcta ccagggcttc cacgtgcccg agggctacaa ggaccgcatg
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20161  aaggactaca aggccgtcac cctacccttc cagcacaaca actcgggctt caccggctac
20221  cttgcgccca ccatgcgcca ggggcagccc tacccgcca acttcccta cccgctcatc
20281  ggctccaccg cagttccctc cgtcacccag aaaaagttcc tctgcgacag ggtcatgtgg
20341  cgcatcccat tctccagcaa ctttatgtcc atgggcgccc tcaccgacct gggtcagaac
20401  atgctctatg ccaactcggc ccacgcgctc gacatgacct ttgaggtgga ccccatggat
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20521  caccgcggcg tcatcgaggc cgtctacctg cgcacgccct tctccgccgg caacgctacc
20581  acttaagcat gagcggctcc agcgaacaag agctcgcggc catcgtcgcg gacctgggat
20641  gcgggcccta cttttttggga acccacgaca agcgcttccc tggcttcctt gccggcgaca
20701  agctggcctg cgccatcgtc aacacggccg gccgcgagac cggaggcgtg cactggctcg
20761  cctttggctg ggaatccgcgc tcgcgcacct gctacatgtt cgacccctatt gggttctcgg
20821  accgccggct caagcagatt tacagcttcg agtacgaggc catgctgcgc cgaagcgcgc
20881  ttgcctcctc gcccgaccgc tgtctcagcc tcgagcagtc cacccagacc gtgcaggggc
20941  ccgactccgc cgcctgcgga ctttttttgtt gcatgtttttt gcatgccttc gtgcactggc
21001  ccgaccgacc catggacgga aaccccacca tgaacttgct gacggggggtg ccaaacggca
21061  tgctacaatc gccacaggtg ctgcccaccc tcaggcgcaa ccaggaggag ctctaccgct
21121  tcctcgcgcg ccactcccct tactttcgat cccaccgcgc cgccatcgaa aacgccaccg
21181  cttttgataa aatgaaacaa ctgcgtgtat ctcaataaac agcactttat tttacatgca
21241  ctggagtata tgcaagttat ttaaaagtcg aaggggttct cgcgctcgtc gttgtgcgcc
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21361  accagtttgg gcactggggt ctcggggaag gtctcgctcc acatgcgccg gctcatctgc
21421  agggcgccca gcatgtccgg gccggagatc ttgaaatcac aattggggcc ggtgctctgc
21481  gcgcggcgagt tgcggtacac ggggttgcag cactggaaca ccattagact ggggtacttc
21541  acactggcaa gcacgctctt gtcgctgatc tgatccttgt ccaggtcctc ggcgttgctc
21601  aggccgaacg gggtcatctt gcacagctgg cggcccagga agggcacgct ctgaggcttg
21661  tggttacact cgcagtgcac gggcatcagc atcatccccg cgccgcgctg catattcggg
21721  tagagggcct tgacgaaggc cgtgatctgc ttgaaagctt gctgggcctt agccccctcg
21781  ctgaaaaaca ggccgcagct cttccgcta aactggttat tcccgcaccc ggcatcatgc
21841  acgcagcagc gcgcgtcatg gctggtcagt tgcaccacgc tacgtcccca gcggttctgg
21901  gtcaccttgg ccttgctggg ctgctccttc aacgcgcgct gcccgttctc gctggtcaca
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21961  tccatctcca  ccacgtggtc  cttgtggatc  atcaccgtcc  catgcagaca  cttgagctga
22021  ccctcgacat  cgcagcagcc  atgatcccac  agggcgcagc  cggtgcactc  ccagttctta
22081  tgcgcgatcc  cgctgtggct  gaagatgtaa  ccttgcaaca  ggcgacccat  gacggtgcta
22141  aatgctttct  gggtggtgaa  ggtcagttgc  agaccgcggg  cctcctcgtt  catccaggtc
22201  tggcacatct  tttggaagat  ctcggtctgc  tcgggcatga  gcttgtaagc  atcgcgcagg
22261  ccgctgtcga  cgcggtagcg  ttccatcagc  acgttcatgg  tatccatgcc  cttctcccag
22321  gacgagacca  gaggcagact  caggggggttg  cgcacgttca  ggacaccggg  ggtcgcaggc
22381  tcgacgatgc  gttttccgtc  cttgccttcc  ttcaacagaa  ccggaggctg  gctgaatccc
22441  actcccacga  ttacggcatc  ttcctggggc  atctcttcgt  cggggtctac  cttggtcaca
22501  tgcttggtct  ttctggcttg  cttcttttt  ggagggctgt  ccacggggac  cacgtcctcc
22561  tcggaagacc  cggagcccac  ccgctgatac  tttcggcgct  tggtgggcag  aggaggtggt
22621  ggcggcgagg  ggctcctctc  ctgctccggc  ggatagcgcg  ccgacccgtg  gccccggggc
22681  ggagtggcct  ctcgctccat  gaaccggcgc  acgtcctgac  tgccgccggc  cattgtttcc
22741  taggggaaga  tggaggagca  gccgcgtaag  caggagcagg  aggaggactt  aaccacccac
22801  gagcaaccca  aaatcgagca  ggacctgggc  ttcgaagagc  cggctcgtct  agaaccccca
22861  caggatgaac  aggagcacga  gcaagacgca  ggccaggagg  agaccgacgc  tgggctccag
22921  catggctacc  tgggaggaga  ggaggatgtg  ctgctaaaac  acttgcagcg  ccaatccatc
22981  atcctccggg  acgccctggc  cgaccggagc  gaaacccctc  tcagcgtcga  ggagctgtgt
23041  cgggcctacg  agctcaacct  cttctcgccg  cgcgtgcccc  ccaaacgcca  gcccaacggc
23101  acctgcgagc  ccaacccgcg  tctcaacttc  tatcccgtct  ttgcggtccc  cgaggcccta
23161  gccacctatc  acatctttt  caagaaccaa  aagatccccg  tctcctgccg  cgccaaccgc
23221  acccgcgccg  acgcgctcct  cgctctgggg  cccggcgcgc  gcatacctga  tatcgcttcc
23281  ctggaagagg  tgcccaagat  cttcgaaggg  ctcggtcggg  acgagacgcg  cgcggcaaac
23341  gctctgaaaa  aaacagcaga  ggaagagggt  cacactagcg  ccctggtaga  gttggaaggc
23401  gacaacgcca  ggctggccgt  gctcaagcgc  agcgtcgagc  tcacccactt  cgcctacccc
23461  gccgtcaacc  tcccgcccaa  ggtcatgcgt  cgcatcatgg  atcagctcat  catgcccac
23521  atcgaggccc  tcgatgaaag  tcaggagcag  cgccccgagg  acgcccggcc  cgtggtcagc
23581  gacgagcagc  tcgcgcgttg  gctcgggacc  cgcgacccccc  aggctttgga  acagcggcgc
23641  aagctcatgc  tggccgtggt  cctggtcacc  ctcgagctcg  aatgcatgcg  ccgcttcttc
23701  agcgaccccg  agaccctgcg  taaggtcgag  gagaccctgc  actacacttt  caggcacggt
23761  ttcgtcaggc  aggcctgcaa  gatctccaac  gtggagctga  ccaacctggt  ctcatgcctg
23821  gggatcctgc  acgagaaccg  cctgggacag  accgtgctcc  actctactct  gaagggcgag
23881  gcgcgtcggg  actatgtccg  cgactgtgta  tttctctta  tctgccacac  ctggcaagca
23941  gccatgggcg  tgtggcagca  gtgtctcgag  gacgaaaatc  tgaaggagct  ggacaagctt
24001  cttgctagaa  accttaaaaa  gctgtggacg  ggcttcgacg  agcgcaccgt  cgcctcggac
24061  ctggccgaga  tcgtttttcc  agaacgcctg  aggcagacgc  tgaaaggcgg  gctgcccgac
24121  ttcatgagcc  agagcatgtt  gcaaaactac  cgcactttca  ttctcgagcg  atctgggatg
24181  ctacccgcca  cctgcaacgc  attcccctcc  gactttgtcc  cgctgagcta  ccgcgagtgt
24241  cccccgccgc  tgtggagcca  ctgctatctc  ttgcagctgg  ccaactacat  cgcctaccac
24301  tcggacgtga  tcgaggacgt  gagcggcgag  gggcttctcg  agtgccactg  ccgctgcaac
24361  ctgtgctccc  cgcaccgctc  cctggtctgc  aacccccagc  ttctgagcga  gacccaggtc
24421  atcggtacct  tcgagctgca  aggtccgcag  gagtccaccg  ctccgctgaa  actcacgccg
24481  gggttgtgga  cttccgcgta  cctgcgcaaa  tttgtacccg  aggactacca  cgcccatgaa
24541  ataaagttct  tcgaggacca  atcgcgccca  cagcacgcgg  atctcacggc  ctgcgtcatc
24601  acccaggggcg  cgatcctcgc  ccaattgcac  gccatccaaa  aatcccgcca  agagtttctt
24661  ctaaaaaagg  gtagaggggt  ctacctggac  ccccagacgg  gcgaggtgct  caacccgggt
24721  ctcccccagc  atgccgagga  agaagcagga  gccgctagtg  gagcagatgg  aagaagaatg
24781  ggacagccag  gcagaggagg  acgaatggga  ggaggagaca  gaggaggaag  aattggaaga
24841  ggtggaagag  gagcaggaaa  cagagcagcc  cgtcgccgca  ccatccgcgc  cggcagcccc
24901  gccggtcacg  gatacaacct  ccacagctcc  ggccaagcct  cctcgtagat  gggatcgagt
24961  gaagggtgac  ggtaagcacg  agcggcaggg  ctaccgatca  tggagggtcc  acaaagccgc
25021  gatcatcgcc  tgcttgcaag  actgcggggg  gaacatcgct  ttcgcccgcc  gctacctgct
25081  cttccaccgc  ggggtgaaca  tcccccgcaa  cgtgttgcat  tactaccgtc  accttcacag
25141  ctaagaaaaa  gcaagtaaga  ggagtcgccg  gaggaggcct  gaggatcgcg  gcgaacgagc
25201  cctcgaccac  cagggagctg  aggaaccgga  tcttccccac  tctttatgcc  atttttcagc
25261  agagtcgagg  tcagcagcaa  gaactgaaag  taaaaaaccg  gtctctgcgc  tcgctcaccc
25321  gcagttgctt  gtaccacaaa  aacgaagatc  agctgcagcg  cactctcgaa  gacgccgagg
25381  ctctgttcca  caagtactgc  gcgctcactc  ttaaagacta  aggcgcgcc  acccggaaaa
25441  aaggcgggaa  ttacctcatc  gccaccatga  gcaaggagat  tcccacccct  tacatgtgga
25501  gctatcagcc  ccagatgggc  ctggccgcgg  gcgcctccca  ggactactcc  acccgcatga
25561  actggctcag  tgccggcccc  tcgatgatct  cacgggtcaa  cggggtccgt  aaccatcgaa
```

FIG. 16A-7

```
25621 accagatatt gttggagcag gcggcggtca cctccacgcc cagggcaaag ctcaacccgc
25681 gtaattggcc ctccaccctg gtgtatcagg aaatccccgg gccggactacc gtactacttc
25741 cgcgtgacgc actggccgaa gtccgcatga ctaactcagg tgtccagctg gccggcggcg
25801 cttcccggtg cccgctccgc ccacaatcgg gtataaaaac cctggtgatc cgaggcagag
25861 gcacacagct caacgacgag ttggtgagct cttcgatcgg tctgcgaccg gacggagtgt
25921 tccaactagc cggagccggg agatcgtcct tcactcccaa ccaggcctac ctgaccttgc
25981 agagcagctc ttcggagcct cgctccggag gcatcggaac cctccagttc gtggaggagt
26041 ttgtgccctc ggtctacttc aaccccttct cgggatcgcc aggcctctac ccggacgagt
26101 ttataccgaa cttcgacgca gtgagagaag cggtggacgg ctacgactga atgtcccatg
26161 gtgactcggc tgagctcgct cggttgaggc atctggacca ctgccgccgc ctgcgctgct
26221 tcgcccggga gagctgcgga ctcatctact ttgagtttcc cgaggagcac cccaacggcc
26281 ctgcacacgg agtgcggatc accgtagagg gcaccaccga gtctcacctg gtcaggttct
26341 tcacccagca acccttcctg gtcgagcggg accggggagc taccacctac accgtctact
26401 gcatctgtcc taccccgaag ttgcatgaga attttttgctg tactctttgt ggtgagttta
26461 ataaaagctg aactaagaac cttctttgga atcccttgtc atcatcaaat caacaagacc
26521 atcaacttca cctttgagga acaggtgaac tttacctgca agccacacaa gaagtacatc
26581 atctggtttt atcacaacac tactctagca gtagccaaca cctgctcgaa cgacggtgtt
26641 ctcctaccta acaatctcac cagtggacta accttctcag ttaaaagggc aaagctaatt
26701 cttcatcgcc ctattgtaga aggaacttac cagtgtcaga gcggaccttg cttccacagt
26761 ttcactttgg tgaacgttac cggcagcagc acagccgctc cagaaacatc taacctttct
26821 tctgatacta acaaacctcg tgtcggaggt gagctttggg ttccatctct aacagagggt
26881 gggagttcta ttgaagtggt tgggtatttg atttttaggg tggtcattgg tgggtgcata
26941 gcagtgctgt atcaacttcc ttgctgggtc gaaatcaggg tatttatctg ctgggtcaga
27001 cattgtgggg aggaaccatg aaggggctct tgctgattat cctttccctg gtggggggtg
27061 tgctgtcatg ccacgaacag ccacgatgta acattaccac aggcaatgag aggaacgact
27121 gctctgtagt tatcaaatgc gagcaccatt gtcctctcaa catcacattc aagaataaga
27181 ccatgggaaa tgtatgggtg ggattctggc aaccaggaga tgagcagaac tacacggtca
27241 ctgtccatgg tagcgatggc aatcacactt tcggtttcaa attcatttt gaagtcatgt
27301 gtgatatcac actacatgtg gctagacttc atggcttgtg gcccctacc aaggagaaca
27361 tggtggggttt ttctttggct tttgtgatca tggcctgctt gatgtcaggt ctgctggtag
27421 gggctctagt gtggtttctg aaacgcaagc ccaggtacgg aaatgaggag aaggaaaaat
27481 tgctataaat tcttttttctc ttcgcacaac catgaataca gtgttccgta tcgtgctgct
27541 ctctcttctt gtagctttcg gtcaggcagg aattcatatt attaatgcta catggtggga
27601 taatataact ttagtgggac cctcagatac tccagttacc tggtatgatg gcaagggatt
27661 gcaattttgt gacggaagta cagttaagaa tccgcagatc agacatactt gtaatgatca
27721 aaacttaact ctgattcatg ttaacaaaac ccatgaaaga acatacatgg gttacagaca
27781 tgacagtaag ggaaaagtag actataaggt tacagtcatt ccacctcctc ctgctactgt
27841 aaagccacaa ccagatccag aaaatgtctt tgtttatatg ggaaataatg taactttagt
27901 tggacctcca ggaattccag ttagttggta ttatcataat ggcacacagt tctgcgatgg
27961 agataaaatt attcatccag aattcaacca cacctgtgat aaacaaaacc ttacactgct
28021 gtttgtaaac tttacacatg atggaggcta tcttggattc aattacaaag gtactcagag
28081 aattcagtat gaggttatag ttttagatcg atttccaaat tctggtcaga tgaaaattga
28141 agaacaaagt gaggaaacag aacagaaaca tactgagcat aataaggctg gacaaaagca
28201 gggtatagat acaaatcaaa agaaagctaa taacagacaa aagccatctc aaaggccatc
28261 aagaagacgg ccgacaaaca ctcctgagac aaaacaactt acagtgtcta ttgggtctaa
28321 cttaactttta gttggtccag atggaaagt cacttggtat gatggtgatt aaaaagacc
28381 atgtgaagaa caaaactata ggcttccaca tcagtgtagt gctcagaact taactttaat
28441 taatgtaact aaatctcatg agggaacttta ctatggcact aatgacaaag acgaaagcaa
28501 aagatacaga gtgaaagtga acactacaaa ttctcaagct gtaaaaatta acccatatac
28561 cagacctact actcctgatc agaaacacag atttgaatta caaattgaaa ataatgcaaa
28621 tgatgaagaa tcaaaaattc catctactac tgtggcaatc gtggtgggag tgattgcggg
28681 cttcataact ataatcattg tcattctgtg ctacatctgc tgccgcaagc gtcccagggc
28741 atacaatcat atggtagcac cactactcag cttctcttac tgagactcag tcactttcat
28801 ttcagaacca tgaaggcttt cacagtcttg gttctgttta acataatcac acttagtgta
28861 gctgcaaatg gtttttaaaca tgttaatgtt accagattaa gtaatgtaac actgacagga
28921 gctggaatta atactacatg gacagggtat tttaatgagg gtccaaaagg aaaaaatggg
28981 tggatgaata tttgcacatg gggcgatcct agatatgtgt gccatggaaa tagcagtact
29041 attactaatc ttacagttgt ggcacttcta aatttaacca ctaacagaag atttaaagca
29101 gaaagtttta ctagtaacga tggttatgaa actaccagtg caaaatttta tgaaattaaa
29161 attattgagc ttccaacaac tagagcaccc accacagtta ggacaacaca gcctaccact
29221 gtgcccacta cacatccaac caccacagtc agtacaacta ttgagaccac tactcatact
```

FIG. 16A-8

```
29281  acacagctag  acacaacagt  gcagaatact  actttattga  ttgggttttt  actgagagga
29341  aatgaaagta  ctactgaaca  gacagaggct  acctcaagtg  ccttcagcag  cactgcaaat
29401  ttaacttcgc  ttgcttggac  taatgaaacc  ggagtatcat  tgatgaatcg  acagccttac
29461  tcaggtttgg  atattcaaat  tactttctg  gttgtctgtg  ggatctttat  tcttgcggtt
29521  cttctgtact  ttgtctgctg  caaagccaga  gagaaatcta  ggcggcccat  atacaggcca
29581  gtaatcgggg  aacctcagcc  tctccaagtg  gatggaggct  taaggaatct  tctcttctct
29641  tttacagtat  ggtgatcagc  catgattcct  aggttcttcc  tatttaacat  cctgttctgt
29701  ctcttcaaca  tctgtgctgc  cttcgcggcc  gtctcgcacg  cctcgcccga  ctgtctaggg
29761  ccttttcccaa  catacctcct  cttttgccctg  ctaacctgca  cctgcgtctg  cagcattgtc
29821  tgcgtggtca  tcacctttct  gcagctcatc  gactggtgct  gcgcgcgcta  caattatctc
29881  caccacagtc  ccgaatacag  ggacgagaac  gtagccagaa  tcttaaggct  catctgacca
29941  tgcagcctct  gctcatgctg  atatccctcc  tatcccctgc  ccttgccact  tctgctgatt
30001  actctaaatg  caaattcgcg  gacatatgga  atttcttaga  ttgctatcag  gagaaaattg
30061  atatgccctc  ctattacttg  gtgattgttg  gggtagtcat  ggtctgctca  tgcactttct
30121  ttgccattat  gatctacccc  tgttttaatc  ttggctggaa  ctctgttgag  gcattcacat
30181  acacactaga  aaacagttca  ctagcctcca  cgccaccacc  cacaccgcct  ccccgcagaa
30241  atcagttccc  tatgattcag  tacttagaag  agcccctcc  ccggcccct  tccactgtta
30301  gctactttca  cataaccggc  ggcgatgact  gaccacctgg  acctcgagat  ggacggccag
30361  gcctccgagc  agcgcatcct  gcaactgcgc  gtccgacagc  agcaggagcg  ggccgccaag
30421  gagctcctcg  atgccatcaa  catccaccag  tgcaagaagg  gcatcttctg  cctggtcaag
30481  caggcaaaga  tcacctacga  gctcgtgtcc  ggcggcaagc  agcatcgcct  cgcctatgag
30541  ctaccccagc  agaagcaaaa  gttcacctgc  atggtgggcg  tcaaccccat  agtcatcacc
30601  cagcagtcgg  gcgagaccaa  cggctgcatc  cactgctcct  gcgaaagccc  cgagtgcatc
30661  tactccctcc  tcaagaccct  ttgcggactc  cgcgacctcc  tccccatgaa  ctgatgttga
30721  ttaaaagccc  aaaaaccaat  caaacccttc  cccaattact  cataagaata  aatcattgga
30781  actaatcatt  caataaagat  cacttacttg  aaatctgaaa  gtatgtctct  ggtgtagttg
30841  ttcagcagca  cctcggaacc  ctcctcccag  ctctggtact  ccagtcccg  gcgggcggcg
30901  aacttcctcc  acaccttgaa  agggatgtca  aattcctggt  ccacaatttt  cattgtcttc
30961  cctcagatga  caaagaggct  ccgggtggaa  gatgacttca  accccgtcta  cccctatggc
31021  tacgcgcgga  atcagaatat  ccccttcctt  actccccct  ttgtttcttc  cgatggattc
31081  caaaacttcc  cacctggggt  cctgtcactc  aaactggctg  acccaatcgc  catcactaat
31141  ggggatgttt  cactcaaggt  gggaggggt  cttactgttg  aaaaagatag  tggaaatcta
31201  aaggtgaacc  ctaaggctcc  cttgcaagtt  acaactgata  aacagttgga  aattgcactg
31261  gcttatccat  ttgaagtcag  taatggcaag  cttggcataa  aagcaggtca  tggattgaaa
31321  gtcattgaca  aaattgctgg  tttggaaggt  ttggcaggta  cgcttgtagt  tttgactgga
31381  aaaggaatag  gtactgaaaa  tcttgaaaac  agtgatgggt  caagtagagg  agttggtata
31441  aacgtaagac  ttgctaaaga  tggaggtctg  tcttttgata  aaaagggtga  tttagttgct
31501  tggaataaac  atgatgacag  acgcactcta  tggacaactc  ccgacccatc  cccaaattgt
31561  acaatcgatc  aggaaaggga  ttcaaagctc  actttagtat  taacaaaatg  tggcagtcaa
31621  attttggcta  atgtctcttt  acttgttgta  aaaggaaaat  ttagtaacat  aaacaataat
31681  actaatccaa  ctgataaaaa  aatcacagta  aagctacttt  ttaatgaaaa  gggagtatta
31741  atggacagtt  cgacacttaa  gaaagaatat  tggaactaca  gaaatgataa  ttctactgta
31801  tctcaggcct  atgataatgc  agttcctttt  atgccaaaca  taaaagctta  tcctaaacct
31861  accacagaca  cttcggctaa  accagaagat  aaaaaaagtg  ctgctaaaag  atacattgtg
31921  agcaatgtct  atattggagg  cttgccagat  aaaactgttg  ttataactat  taagtttaat
31981  gcagaaactg  aatgtgctta  ttcgattacc  tttgaattca  catgggcaaa  aacctttgaa
32041  gatgtgcagt  ttgattcctc  ctcttttacc  ttttcctata  ttgcccaaga  aaatgaggac
32101  gaagacaaat  aaaatgtttt  aaaatgaatt  catgtatctt  tattgatttt  tacaccagca
32161  cgggtagtca  gtctcccacc  accagcccat  ttcacagtgt  aaacgattct  ctcagcacgg
32221  gtggccttaa  atagggaaat  gttctgatta  gtgcgggaac  tggacttggg  gtctataatc
32281  cacacagttt  cctggcgagc  caaacggggg  tcggtgattg  agatgaagcc  gtcctctgaa
32341  aagtcatcca  agcgggcctc  acagtccaag  gtcacagtct  ggtgaaacga  gaagaacgca
32401  cagattcata  ctcggaaaac  aggatgggtc  tgtgcctctc  catcagcgcc  ctcaacagtc
32461  tctgccgccg  gggtcggtg  cggctgctgc  agatgggatc  gggatcacaa  gtctctctga
32521  ctatgatccc  cacagccttc  agcatcagtc  tcctggtgcg  tcgggcacag  caccgcatcc
32581  tgatctcgct  catgttctca  cagtaagtgc  agcacataat  caccatgtta  ttcagcagcc
32641  cataattcag  ggtgctccag  ccaaaactca  tgttggggat  gatggaaccc  acgtgaccat
32701  cgtaccagat  gcggcagtat  atcagatgcc  tgcccctcat  gaacacactg  cccatataca
32761  tgatctcttt  gggcatgtct  ctgttcacaa  tctgacggta  ccagggaaag  cgctggttga
32821  acatgcaccc  gtaaatgact  ctcctgaacc  acacggccag  cagggtgcct  cccgcccgac
32881  actgcaggga  gcccggggat  gaacagtggc  aatgcaggat  ccagcgctcg  tacccgctca
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FIG. 16A-9

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32941 ccatctgagc tctcaccaag tccagggtag cggggcacag gcacactgac atacatcttt
33001 ttaaaatttt tatttcctct ggagtcaaga tcatatccca ggggactgga aactcttgga
33061 gcagggtaaa gccagcagca catggtaatc cacggacaga acttacatta tgataatctg
33121 catgatcaca atcaggcaac aggggatgtt gttcagtcag tgaagccctg gtttcctcat
33181 cagatcgtgg taaacgggcc ctgcgatatg gatgatggcg gagcgagctg gattgaatct
33241 cggtttgcat tgtagtggat tctcttgcgt accttgtcgt acttctgcca gcagaaatgg
33301 gcccttgaac agcagatacc cctcctgcgg ccgtcctttc gctgctgccg ctcagtcatc
33361 caactgaagt acatccattc tcgaagattc tggagaagtt cctctgcatc tgatgaaaca
33421 aaaaacccgt ccatgcgaat tcccctcatc acatcagcca ggactctgta ggccatcccc
33481 atccagttaa tgctgccttg tctatcattc agaggggcg gtggcaggat tggaagaacc
33541 attttttattc caaacggtct cgaaggacga taaagtgcaa gtcacgcagg tgacagcgtt
33601 cccctccgct gtgctggtgg aaacagacag ccaggtcaaa acccactcta ttttcaaggt
33661 gctcgaccgt ggcttcgagc agtggctcta cgcgtacatc cagcataaga atcacattaa
33721 aggctggccc tccatcgatt tcatcaatca tcaggttaca ttcctgcacc atccccaggt
33781 aattctcatt tttccagcct tggattatct ctacaaattg ttggtgtaag tccactccgc
33841 acatgtggaa aagctcccac agtgccccct ccactttcat aatcaggcag accttcataa
33901 tagaaacaga tcctgctgct ccaccacctg cagcgtgttc aaaacaacaa gattcaataa
33961 ggttctgccc tccgccctga gctcgcgcct caatgtcagc tgcaaaaaat cacttaagtc
34021 ctgggccact acagctgaca attcagagcc agggctaagc gtgggactgg caagcgtaag
34081 ggaaaacttt aatgctccaa agctagcacc caaaaactgc atgctggaat aagctctctt
34141 tgtgtctccg gtgatgcctt ccaaaatgtg agtgataaag cgtggtagtt tttctttaat
34201 catttgcgta atagaaaagt cctgtaaata agtcactagg accccaggga ccacaatgtg
34261 gtagcttaca ccgcgtcgct gaagcatggt tagtagagat gagagtctga aaaacagaaa
34321 gcatgcacta aactaaggtg gctattttca ctgaaggaaa aatcactctc tccaacaaca
34381 gggtacccac tgggtggccc ttgcggacat acaaaaatcg gtccgtgtga ttaaaaagca
34441 gcacagtaag ttcctgtctt cttccggcaa aaatcacatc ggactgggtt agtatgtccc
34501 tggcatggta gtcattcaag gccataaatc tgccctgata tccagtagga accagcacac
34561 tcacttttag gtgaagcaat accaccccat gcggaggaat gtggaaagat tcagggcaaa
34621 aaaaattata tctattgcta gtcccttcct ggacgggagc aatccctcca ggactatcta
34681 tgaaagcata cagagattca gccatagctc agcccgctta ccagtagaca gagagcacag
34741 cagtacaagc gccaacagca gcgactgact acccactgac ccagctccct atttaaaggc
34801 gccttacact gacgtaatga ccaaaggtct aaaaaccccg ccaaaaaaaa acacacacgc
34861 cctgggtgtt ttttgcgaaa acacttccgc gttctcactt cctcgtattg atttcgtgac
34921 ttaacttccg ggttcccacg ttacgtcact tctgccctta catgtaactc agtcgtaggg
34981 cgccatcttg cccacgtcca aaatggcttc catgtccagc cacgcctccg cggcgaccgt
35041 tagccgtgcg tcgtgacgtc atttgcatca tcttctctcg tccaatcagc gctggccccg
35101 ccctaaattc aaaagctcat ttgcatgtta acttttgttt actttgtggg gtatattatt
35161 gatgatc
```
SEQ ID NO: 5

Grp	Vaccine at Wk 0, Wk 4	Monkey ID	Pre		Wk 4		Wk 8		Wk 12	
			Mock	Gag	Mock	Gag	Mock	Gag	Mock	Gag
1	Ad24ΔE1gagΔOrf6Ad5Orf6	00C072	3	4	4	381	3	150	3	68
	10^11 vp	00C178	3	3	1	559	1	743	0	635
		00C222	0	3	1	369	1	753	0	670
		00D011	1	9	9	211	4	273	0	520
		00D023	0	6	0	295	1	459	1	368
		00D031	15	5	10	103	1	101	1	40
2	Ad24ΔE1gagΔOrf6Ad5Orf6	99C168	4	6	0	118	5	241	3	209
	10^10 vp	99C170	10	5	5	241	3	141	3	103
		99C173	1	3	0	23	0	14	0	21
3	Ad24ΔE1gagΔE4Ad5Orf6	99C154	0	3	0	93	0	60	1	53
	10^10 vp	99C158	1	0	1	141	0	101	1	120
		99C177	0	0	0	45	0	39	0	79
4	MRKAd5-HIVgag	00C018	1	5	13	1025	0	824	3	753
	10^11 vp	00C034	0	4	5	219	5	404	0	491
		00C058	4	4	3	1086	0	440	0	439
5	MRKAd5-HIVgag	99C218	0	3	5	2500	0	1580	10	1655
	10^10 vp	99C227	6	1	4	529	5	365	5	1004
		99D185	ND	ND	0	425	0	310	0	271

FIG. 17

Vaccine at Wk 0, Wk 4	Monkey ID	Gag-Specific (Wk 12)	
		%CD4	%CD8
Ad24ΔE1gagΔOrf6Ad5Orf6 10^11 vp	00C072	0.02	0.02
	00C178	0.05	0.38
	00C222	0.02	0.40
	00D011	0.02	0.27
	00D023	0.01	0.11
	00D031	0.01	0.01
MRKAd5-HIVgag 10^11 vp	00C018	0.05	0.41
	00C034	0.06	0.18
	00C058	0.02	0.28

FIG. 18

Grp	Vaccine at Wk 0, Wk 4	Monkey ID	Wk 4	WK 8
1	Ad24ΔE1gagΔOrf6Ad5Orf6 10^11 vp	00C072	<10	77
		00C178	<10	26
		00C222	<10	423
		00D011	<10	98
		00D023	<10	<10
		00D031	<10	<10
2	Ad24ΔE1gagΔOrf6Ad5Orf6 10^10 vp	99C168	<10	<10
		99C170	<10	<10
		99C173	<10	<10
3	Ad24ΔE1gagΔE4Ad5Orf6 10^10 vp	99C154	<10	<10
		99C158	<10	<10
		99C177	<10	<10
4	MRKAd5-HIVgag 10^11 vp	00C018	34	1017
		00C034	14	423
		00C058	46	934
5	MRKAd5-HIVgag 10^10 vp	99C218	20	99
		99C227	40	767
		99D185	17	342

FIG. 19
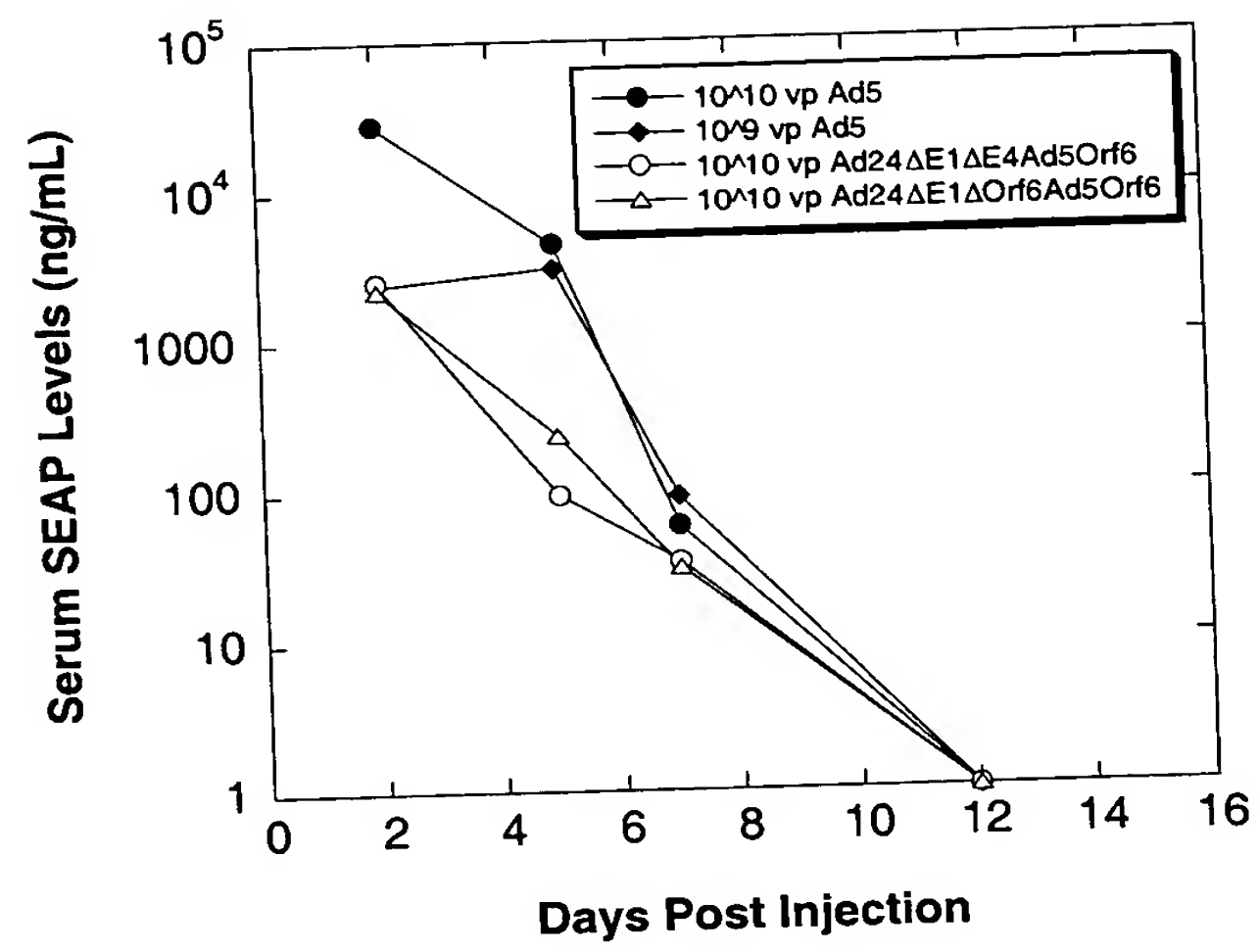
FIG. 20
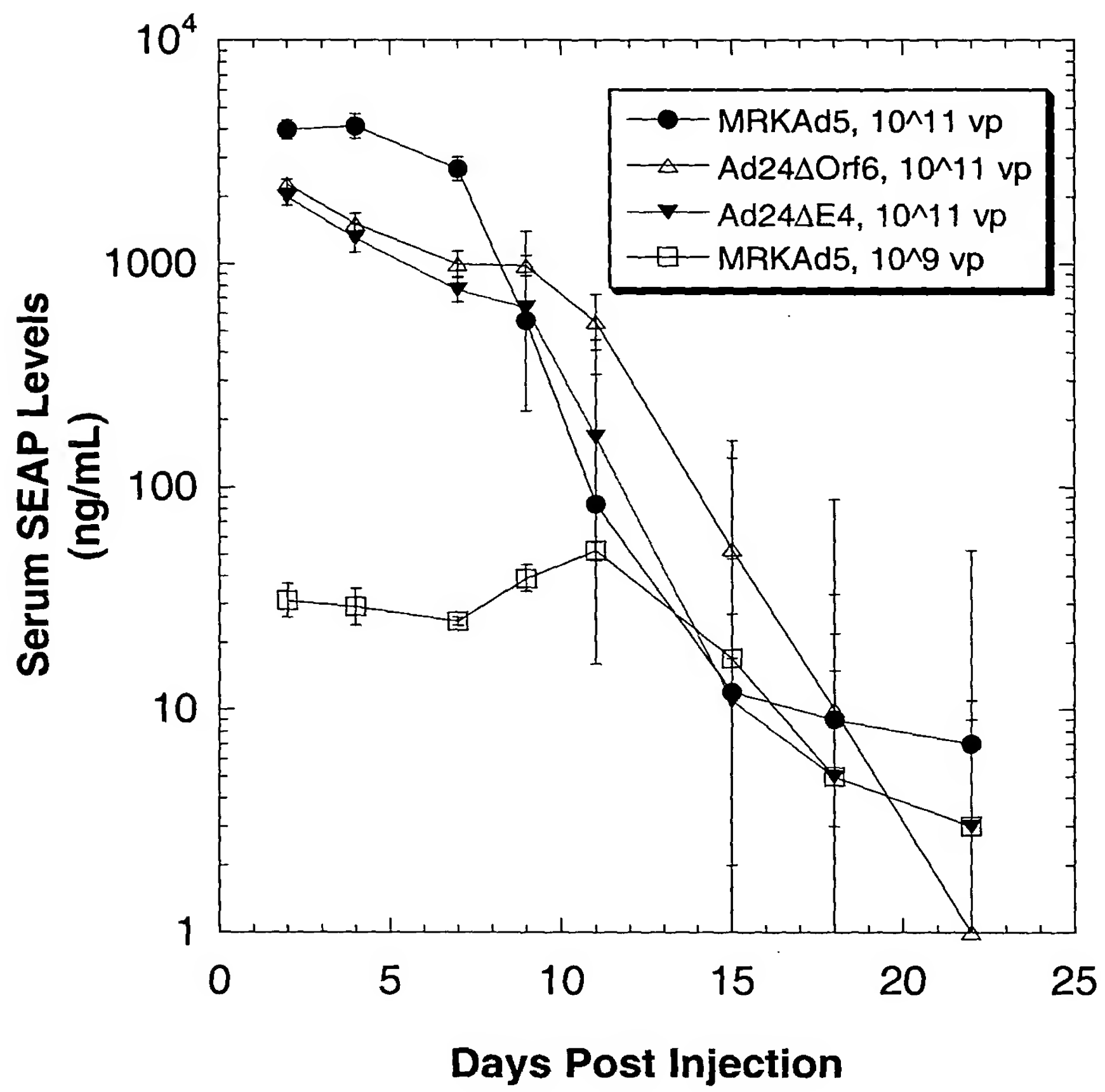
FIG. 21
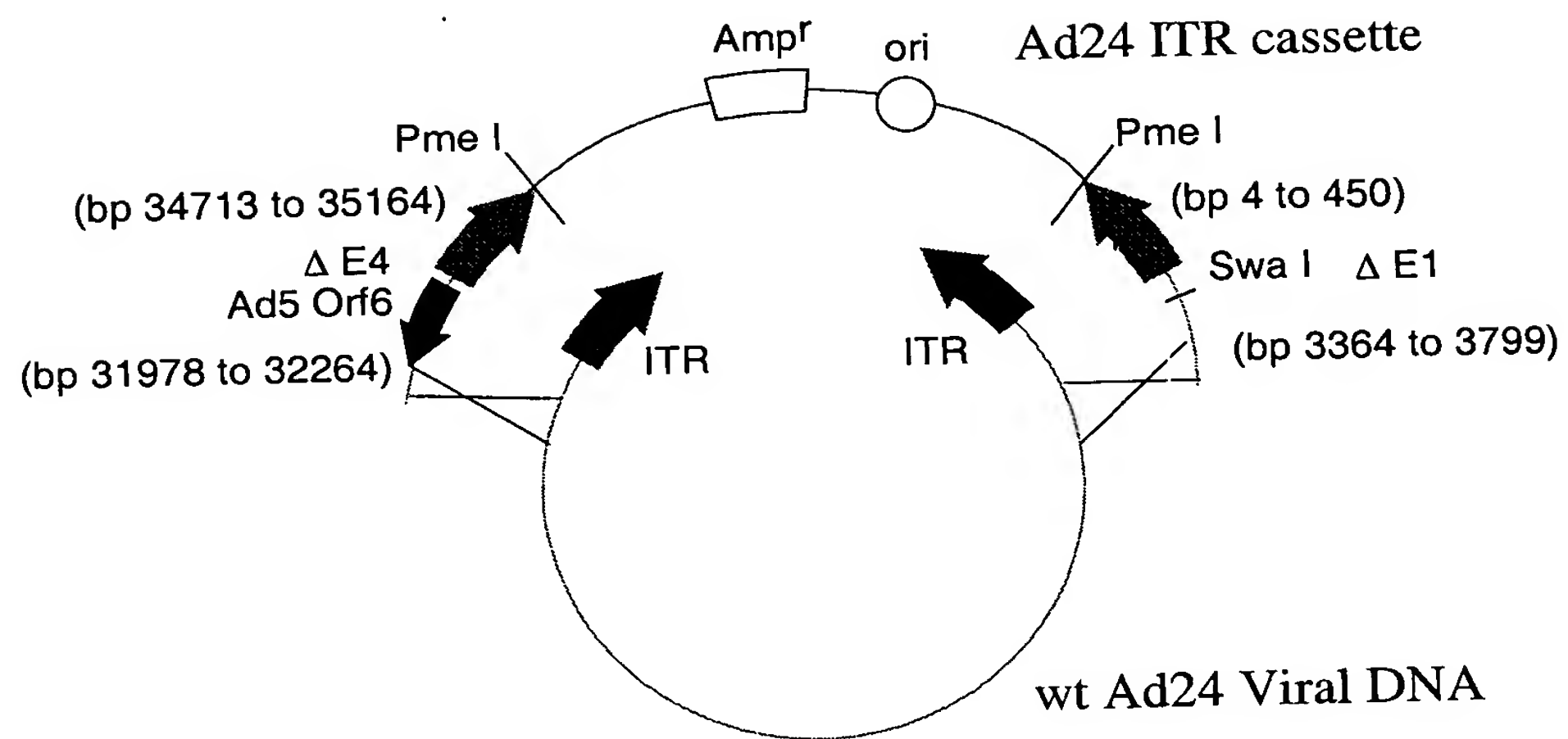
FIG. 22

Animal	Prime (Wk 0, 4, 26)	Boost (Wk 56)	Pre		Prime[b]		Pre-Boost[c]		Post-Boost[d]	
			Mock[a]	Gag[a]	Mock	Gag	Mock	Gag	Mock	Gag
Monkey 1	10^9 vp MRKAd5-gag	10^{11} vp Ad24ΔE1gagΔOrf6Ad5Orf6	18	16	1	244	3	74	3	1235
Monkey 2	10^7 vp MRKAd5-gag	10^{11} vp Ad24ΔE1gagΔOrf6Ad5Orf6	10	9	4	83	0	18	0	856
Monkey 3	10^9 vp MRKAd6-gag	10^{11} vp Ad24ΔE1gagΔOrf6Ad5Orf6	1	1	0	219	9	69	0	703
Monkey 4	10^7 vp MRKAd6-gag	10^{11} vp Ad24ΔE1gagΔOrf6Ad5Orf6	1	1	3	59	1	20	0	419
Monkey 5	none	10^{11} vp Ad24ΔE1gagΔOrf6Ad5Orf6	3	4	ND[e]	ND	ND	ND	4	558
Monkey 6	none	10^{11} vp Ad24ΔE1gagΔOrf6Ad5Orf6	0	3	ND	ND	ND	ND	1	295
Monkey 7	none	10^{11} vp Ad24ΔE1gagΔOrf6Ad5Orf6	1	9	ND	ND	ND	ND	9	103
Monkey 8	none	10^{11} vp Ad24ΔE1gagΔOrf6Ad5Orf6	3	3	ND	ND	ND	ND	1	381
Monkey 9	none	10^{11} vp Ad24ΔE1gagΔOrf6Ad5Orf6	0	6	ND	ND	ND	ND	0	369
Monkey 10	none	10^{11} vp Ad24ΔE1gagΔOrf6Ad5Orf6	15	5	ND	ND	ND	ND	10	211

FIG. 23

Animal	Prime (Wk 0, 4, 26)	Boost (Wk 56)	Gag-Specific T cells (Wk 60)	
			%CD4	%CD8
Monkey 1	10^9 vp MRKAd5-gag	10^{11} vp Ad24ΔE1gagΔOrf6Ad5Orf6	0.06	0.37
Monkey 2	10^7 vp MRKAd5-gag	10^{11} vp Ad24ΔE1gagΔOrf6Ad5Orf6	0.01	0.56
Monkey 3	10^9 vp MRKAd6-gag	10^{11} vp Ad24ΔE1gagΔOrf6Ad5Orf6	0.07	0.06
Monkey 4	10^7 vp MRKAd6-gag	10^{11} vp Ad24ΔE1gagΔOrf6Ad5Orf6	0.04	0.20

FIG. 24

Animal	Prime (Wk 0, 4)	Boost (Wk 24)	Pre		Prime[b]		Pre-Boost[c]		Post-Boost[d]	
			Mock[a]	Gag[a]	Mock	Gag	Mock	Gag	Mock	Gag
Monkey 11	10^{11} vp Ad24ΔE1gagΔOrf6Ad5Orf6	10^7 vp MRKAd5-gag	3	4	3	150	4	28	0	188
Monkey 12	10^{11} vp Ad24ΔE1gagΔOrf6Ad5Orf6	10^7 vp MRKAd5-gag	0	3	1	753	4	554	0	1029
Monkey 13	10^{11} vp Ad24ΔE1gagΔOrf6Ad5Orf6	10^7 vp MRKAd5-gag	1	9	4	273	0	370	0	1520
Monkey 14	none	10^7 vp MRKAd5-gag	0	0	ND[e]	ND	ND	ND	4	94
Monkey 15	none	10^7 vp MRKAd5-gag	0	0	ND	ND	ND	ND	1	168
Monkey 16	none	10^7 vp MRKAd5-gag	8	3	ND	ND	ND	ND	8	149

FIG. 25

Amp^r ori   Ad35 ITR cassette

Pme I
(bp 34419 to 34793)
Δ E4
Ad5 Orf6
(bp 31599 to 31913)

ITR

ITR

Pme I
(bp 4 to 456)

Swa I   Δ E1
(bp 3403 to 3886)

wt Ad34 Viral DNA

FIG. 26

Amp^r ori   Ad34 ITR cassette

Pme I
(bp 34409 to 34772)
Δ E4
Ad5 Orf6
(bp 31584 to 31895)

ITR

Pme I
(bp 4 to 456)
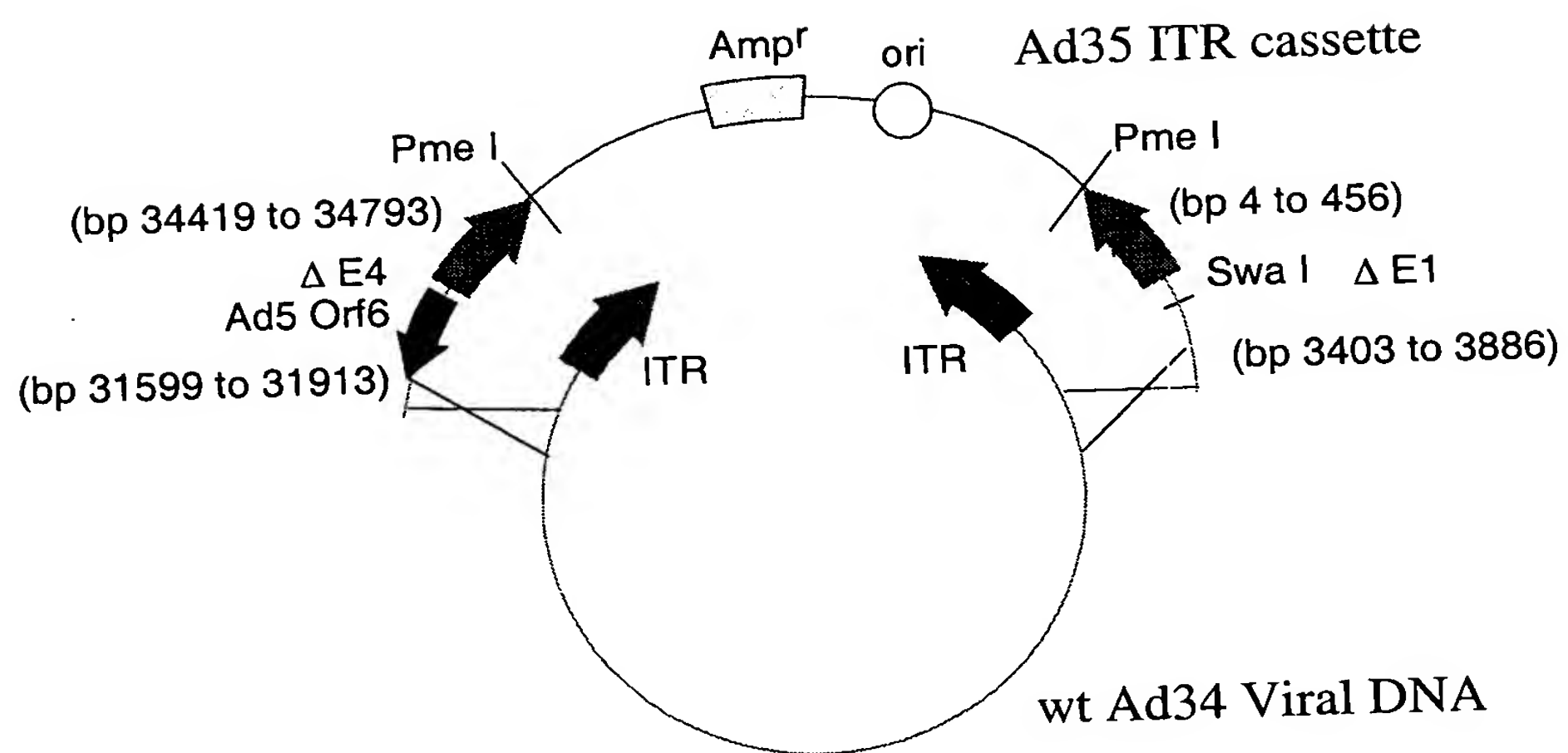Swa I   Δ E1
(bp 3402 to 3885)
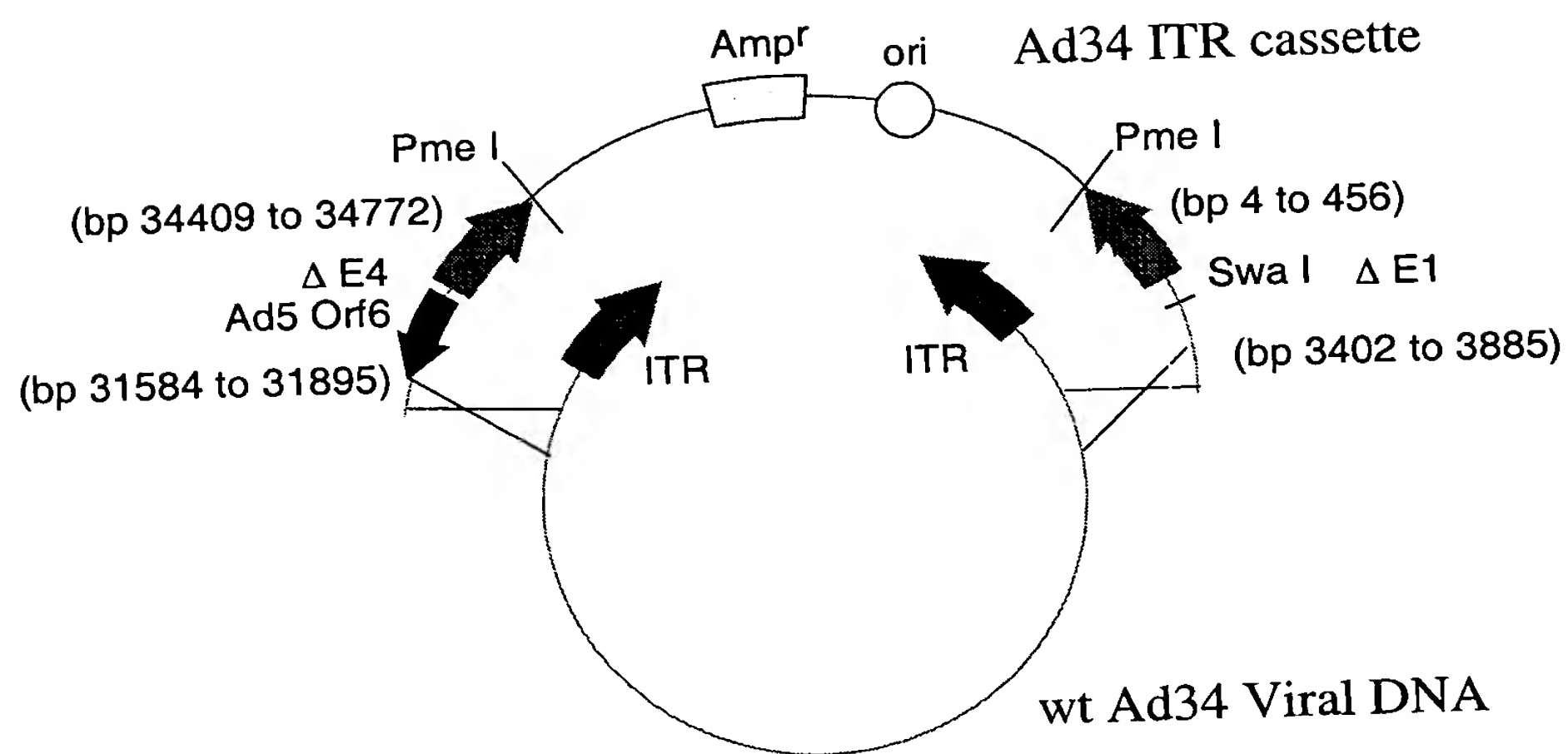
ITR

wt Ad34 Viral DNA

FIG. 27

```
   1 catcatcaat aatatacctt atagatggaa tggtgccaat atgtaaatga ggtgatttta
  61 aaaattgtgg ggtgtgtggt gattggctgt ggggttaacg gctaaacggg gcggcgcggc
 121 cgtgggaaaa tgacgttttg tgggggtgga gtttttttgc aagttgtcgc gggaaatgtg
 181 acgcataaaa aggctttttt tctcacggaa ctactgactt ttcccacggt atttaacagg
 241 aaatgaggta gttttgaccg gatgcaagtg aaaattgctg atttcgcgcg gaaaactgaa
 301 tgaggaagtg tttttctgaa taatgtggta tttatggcag ggtggagtat ttgttcaggg
 361 ccaggtagac tttgacccat tacgtggagg tttcgattac cgtgtttttt acctgaattt
 421 ccgcgtaccg tgtcaaagtc ttctgttttt acgtaggtgt cagctgatcg ctacggtatt
 481 tatacctcag ggtttgtgtc aagaggccac tcttgagtgc cagcgagaag agttttctcc
 541 tctgcgccgg cagtttaata ataaaaaaat gagagatttg cgatttctgc ctcaggaaat
 601 aatttctgct gagactggaa atgaaatact ggagcttgtg gtgcacgccc tgatgggaga
 661 cgatccggag ccacctgtgc agcttttga gcctcctacg cttcaggaac tgtatgattt
 721 agaggtagag ggatcggagg attctaatga ggaagctgtg aatggctttt ttaccgattc
 781 tatgctttta gctgctaatg aaggattaga attagatccg cctttggaca ctttcgatac
 841 tccaggggtg attgtggaaa gcggtacagg tgtaagaaaa ttacctgatt tgggttccgt
 901 ggactgtgat ttgcactgct atgaagacgg gtttcctccg agtgatgagg aggaccatga
 961 aaaggagcag tctatgcaga ctgcagcggg tgagggagtg aaggctgcca gtgttggttt
1021 tcagttggat tgcccggagc ttcctggaca tggctgtaag tcttgtgaat ttcacaggaa
1081 aaatactgga gtaaaggaac tgttatgttc gctttgttat atgagagcgc actgccactt
1141 tatttacagt aagtgtgttt aagttaaaat ttaaaggaat atgctgtttt tcacatgtat
1201 attgagtggg agttttgtgc ttcttattat aggtcctgtg tctgatgctg atgagtcacc
1261 atctcctgat tctactacct cacctcctga gattcaagca cctgttcctg tggacgtgcg
1321 caagcccatt cctgtgaagc ttaagcctgg gaaacgtcca gcagtgaaa aacttgagga
1381 cttgttacag ggtggggacg gacctttgga cttgagtaca cggaaacggc caagacaata
1441 agtgttccat atccgtgttt acttaaggtg acgtcaatat ttgtgtgaga gtgcaatgta
1501 ataaaaatat gttaactgtt cactggtttt tattgctttt tgggcgggga ctcaggtata
1561 taagtagaag cagacctgta tggttagctc ataggagctg gctttcatcc atggaggttt
1621 gggccatttt ggaagacctt agaaagacta ggcaactgtt agaggacgct tcggacggag
1681 tctccggttt ttggagattc tggttcgcta gtgaattagc tagggtagtt tttaggataa
1741 aacaggacta taaagaagaa tttgaaaagt tgttggtaaga ttgcccagga ctttttgaag
1801 ctcttaattt gggccatcaa gttcacttta aagaaaaagt tttatcagtt ttagactttt
1861 caaccccagg tagaactgcc gctgctgtgg cttttcttac ttttatatta gataaatgga
1921 tcccgcagac tcatttcagc aggggatacg ttttggattt cgtagccaca gcattgtgga
1981 gaacatggaa ggttcgcaag atgaggacaa tcttaggtta ctggccagtg cagcctttgg
2041 gtgtagcggg aatcctgagg catccaccgg tcatgccagc ggttctggag gaggaacagc
2101 aagaggacaa cccgagagcc ggcctggacc ctccagtgga ggaggcggag tagctgactt
2161 gtctcctgaa ctgcaacggg tgcttactgg atctacgtcc actggacggg atagggcgt
2221 taagagggag agggcatcta gtggtactga tgctagatct gagttggctt taagtttaat
2281 gagtcgcaga cgtcctgaaa ccatttggtg gcatgaggtc cagaaagagg gaagggatga
2341 agtttctgta ttgcaggaga aatattcact ggaacaggtg aaaacatgtt ggttggagcc
2401 tgaggatgat tgggaggtgg ccattaaaaa ttatgccaag atagctttga ggcctgataa
2461 acagtataag attactagac ggattaatat ccggaatgct tgttacatat ctggaaatgg
2521 ggctgaggtg gtaatagata ctcaagacaa ggcagttatt agatgctgca tgatggatat
2581 gtggcctgga gtagtcggta tggaagcagt aacttttgta aatgttaagt ttaggggaga
2641 tggttataat ggaatagtgt ttatggccaa taccaaactt atattgcatg gttgtagctt
2701 ttttggtttc aacaatacct gtgtagatgc ctggggacag gttagtgtac ggggatgtag
2761 tttctatgcg tgttggattg ccacagctgg cagaaccaag agtcaattgt ctctgaagaa
2821 atgcatattc caaagatgta acctggacat tctgaatgaa ggcgaagcaa gggtccgcca
2881 ctgcgcttct acagatactg gatgtttat tttaattaag ggcaatgcca gcgtaaagca
2941 taacatgatt tgcggtgctt ccgatgagag gccttatcaa atgctcactt gtgccggtgg
3001 gcattgtaat atgctggcta ctgtgcatat tgtttcccat caacgcaaaa aatggcctgt
3061 ttttgatcac aatgtgttga ccaagtgtac catgcatgca ggtgggcgta gaggaatgtt
3121 tatgccttac cagtgtaaca tgaatcatgt gaaagtgttg ttggaaccag atgccttttc
3181 cagaatgagc ctaacaggaa tctttgacat gaacatgcaa atctggaaga tcctgaggta
3241 tgatgatacg agatcgaggg tgcgcgcatg cgaatgcgga ggcaagcatg ccaggttcca
3301 gccggtgtgt gtagatgtga ctgaagatct gagaccggat catttggtta ttgcccgcac
3361 tggagcagag ttcggatcca gtggagaaga aactgactaa ggtgagtatt gggaaaactt
3421 ggggtggggt tttcagatgg acagattgag taaaaatttg tttttttctgt ctttcagctg
3481 tcatgagtgg aaacgcttct tttaaggggg gagtcttcag cccttatctg acagggcgtc
3541 tcccatcctg ggcaggagtt cgtcagaatg ttatgggatc tactgtggat ggaagacccg
3601 tccaacccgc caattcttca acgctgacct atgctacttt aagttcttca cctttggacg
3661 cagctgcagc cgccgccgcc gcctctgttg ccgctaacac tgtgcttgga atgggttact
3721 atggaagtat cgtggctaat tccacttcct ctaataaccc ttctaccctg actcaggaca
3781 agttacttgt ccttttggcc cagctggagg ctttgaccca acgtctgggt gaactttatc
3841 agcaggtggc cgagttgcga gtacaaactg agtctgctgt cggcacggca aagtctaaat
```

FIG. 28A-1

```
3901 aaaaaaaaat tccacaatca atgaataaat aaacgagctt gttgttgatt taaaatcaag
3961 tgtttttatt tcatttttcg cgcacggtat gccctagacc accgatctcg atcattgaga
4021 acacggtgga ttttttccag aatcctatag aggtgggatt· gaatgtttag atacatgggc
4081 attaggccat ctttgggggtg gagatagctc cattgaaggg attcatgctc cggggtagtg
4141 ttgtaaatca cccagtcata acaaggtcgc agtgcatggt gttgcacaat atcttttaga
4201 agtaggctga ttgccacaga taagcccttg gtgtaggtgt ttacaaaccg gttgagctgg
4261 gagggggtgca ttcggggtga aattatgtgc attttggatt ggatttttaa gttggcaata
4321 ttgccgccaa gatctcgtct tgggttcatg ttatgaagga ccaccaagac ggtgtatccg
4381 gtacatttag gaaatttatc gtgtagcttg gatggaaaag cgtggaaaaa tttggagaca
4441 cccttgtgtc ctccgagatt ttccatgcac tcatccatga taatagcaat ggggccgtgg
4501 gcagcagcgc gggcaaacac gttccgtggg tctgacacat catagttatg ttcctgagtt
4561 aaatcatcat aagccatttt aatgaatttg gggcggagag tacccgattg gggtatgaat
4621 gttccttcgg gccccggagc atagttcccc tcacagattt gcatttccca agctttcagt
4681 tccgatggtg gaatcatgtc cacctggggg gctatgaaga acaccgtttc tggggcgggg
4741 gtgattagtt gggatgatag caagtttctg agcaattgag atttgccaca tccggtgggg
4801 ccataaatga ttccgattac aggttgcagg tggtagttta gggaacggca actgccgtct
4861 tctcgaagca aggggggccac ctcgttcatc atttccctta catgcatatt ttcccgcacc
4921 aaatccatta ggaggcgctc tcctcctagt gatagaagtt cttgtagtga ggaaaagttt
4981 ttcagcggtt ttagaccgtc agccatgggc attttggaga gagtttgctg caaaagttct
5041 agtctgttcc acagttcagt gatgtgttct atggcatctc gatccagcag acctcctcgt
5101 ttcgcgggtt tggacggctc ctggatagg gtatgagacg atgggcgtcc agcgctgcca
5161 gggttcggtc cttccagggt ctcagtgttc gagtcagggt tgtttccgtc acagtgaagg
5221 ggtgtgcgcc tgcttgggcg cttgccaggg tgcgcttcag actcattctg ctggtggaga
5281 acttctgtcg cttggcgccc tgtatgtcgg ccaagtagca gtttaccatg agttcgtagt
5341 tgagcgcctc ggctgcgtgg cctttggcgc ggagcttacc tttggaagtt ttcttgcata
5401 ccgggcagta taggcatttc agcgcataca gcttgggcgc aaggaaaatg gattctgggg
5461 agtatgcatc tgcgccgcag gaggcgcaaa cagtttcaca ttccaccagc caggttaaat
5521 ccggttcatt ggggtcaaaa acaagttttc cgccatattt tttgatgcgt ttcttacctt
5581 tggtctccat gagttcgtgt cctcgttgag tgacaaacag gctgttccgta tccccgtaga
5641 ctgatttac aggcctcttc tccagtggag tgcctcggtc ttcttcgtac aggaactctg
5701 accactctga tacaaaggcg cgcgtccagg ccagcacaaa ggaggctatg tgggaggggt
5761 agcgatcgtt gtcaaccagg gggtccacct tttccaaagt atgcaaacac atgtcaccct
5821 cttcaacatc caggaatgtg attggcttgt aggtgtattt cacgtgacct gggggtccccg
5881 ctgggggggt ataaaagggg gcggttcttt gctcttcctc actgtcttcc ggatcgctgt
5941 ccaggaacgt cagctgttgg ggtaggtatt ccctctcgaa ggcgggcatg acctctgcac
6001 tcaggttgtc agtttctaag aacgaggagg atttgatatt gacagtgccg gttgagatgc
6061 ctttcatgag gtttttcgtcc atttggtcag aaaacacaat tttttattg tcaagtttgg
6121 tggcaaatga tccatacagg gcgttggata aaagtttggc aatggatcgc atggtttggt
6181 tcttttcctt gtccgcgcgc tctttggcag cgatgttgag ttggacatac tcgcgtgcta
6241 ggcacttcca ttcggggaag atagttgtca attcatctgg cacgattctc acttgccacc
6301 ctcgattatg caaggtaatt aaatccacac tggtggccac ctcgcctcga aggggttcgt
6361 tggtccaaca gagcctacct cctttcctag aacagaaagg gggaagtggg tctagcataa
6421 gttcatcggg agggtctgca tccatggtaa agattcccgg aagtaaatcc ttatcaaaat
6481 agctgatggg agtggggtca tctaaggcca tttgccattc tcgagctgcc agtgcacgct
6541 catatgggtt aaggggactg ccccagggca tgggatgggt gagtgcagag gcatacatgc
6601 cacagatgtc atagacgtag atgggatcct caaagatgcc tatataggtt ggatagcatc
6661 gcccccctct gatacttgct cgcacatagt catatagttc atgtgatggc gctagcaacc
6721 ccggacccaa gttggtgcga ttgggttttt ctgttctgta gacaatctgg cgaaagatgg
6781 cgtgagaatt ggaagagatg gtgggtcttt gaaaaatgtt gaaatgggca tgaggtagac
6841 ctacagagtc tctgacaaag tgggcataag attcttgaag cttggttacc agttcggcgg
6901 tgacaagtac gtctagggcg cagtagtcaa gtgtttcttg aatgatgtca taacctggtt
6961 ggttttttctt ttcccacagt tcgcggttga gaaggtattc ttcgcgatcc ttccagtact
7021 cttctagcgg aaacccgtct ttgtctgcac ggtaagatcc tagcatgtag aactgattaa
7081 ctgccttgta agggcagcag cccttctcta cgggtagaga gtatgcttga gcagcttttc
7141 gcagcgaagc gtgagtaagg gcgaaggtgt ctctgaccat gactttgaga aattggtatt
7201 tgaagtccat gtcgtcacag gctccctgtt cccagagttg gaagtctacc cgtttcttgt
7261 aggcgggggtt gggcaaagcg aaagtaacat cgttgaagag aatcttaccg gctctgggca
7321 taaaattgcg agtgatgcgg aaaggctgtg gtacttccgc tcgattgttg atcacctggg
7381 cagctaggac gatctcgtcg aaaccgttga tgttgtgtcc tacgatgtat aattctatga
7441 aacgcggcgt gcctttgacg tgaggtagct tattgagctc atcaaaggtt aggtctgtag
7501 ggtcagataa ggcgtagtgt tcgagagccc attcgtgcag gtgaggattt gcatgtagga
7561 atgatgacca aagatccacc gccagtgctg tttgtaactg gtcccgatac tgacgaaaat
7621 gctggccaat tgccattttt tctggagtga cacagtagaa ggttctgggg tcttgttgcc
7681 atcgatccca ctttagttta atggctagat cgtgggccat gttgacgaga cgctcttctc
7741 ctgagagttt catgaccagc atgaaaggaa ctagttgttt gccaaaggac cccatccagg
```

FIG. 28A-2

```
7801  tgtaagtttc  cacatcgtag  gtcaggaaga  gtctttctgt  gcgaggatga  gagccgatcg
7861  ggaagaactg  gatttcctgc  caccagttgg  aggattggct  gttgatgtga  tggaagtaga
7921  agtttctgcg  gcgcgccgag  cattcgtgtt  tgtgcttgta  cagacggccg  cagtagtcgc
7981  agcgttgcac  gggttgtatc  tcgtgaatga  gctgtacctg  gcttcccttg  acgagaaatt
8041  tcagtgggaa  gccgaggcct  ggcgattgta  tctcgtgctc  ttctatattc  gctgtatcgg
8101  cctgttcatc  ttctgtttcg  gtggtggtca  tgctgacgag  cccccgcggg  aggcaagtcc
8161  agacctcggc  gcgggagggg  cggagctgaa  ggaccagagc  gcgcaggctg  gagctgtcca
8221  gagtcctgag  acgctgcgga  ctcaggttag  taggtaggga  cagaagatta  acttgcatga
8281  tcttttccag  ggcgtgcggg  aggttcagat  ggtacttgat  ttccacaggt  tcgtttgtag
8341  agatgtcaat  ggcttgcagg  gttccgtgtc  ctttgggcgc  cactaccgta  cctttgtttt
8401  ttcttttgat  cggtggtggc  tctcttgctt  cttgcatgct  cagaagcgat  gacggggacg
8461  cgcgccgggc  ggaagcggtt  gttccggacc  cggaggcatg  gctggtagtg  gcacgtcggc
8521  gccgcgcacg  ggcaggttct  ggtactgcgc  tctgagaaga  cttgcgtgcg  ccaccacgcg
8581  tcgattgacg  tcttgtatct  gacgtctctg  ggtgaaagct  accggccccg  tgagcttgaa
8641  cctgaaagag  agttcaacag  aatcaatttc  ggtatcgtta  acggcagctt  gtctcagtat
8701  ttcttgtacg  tcaccagagt  tgtcctggta  ggcgatctcc  gccatgaact  gctcgatttc
8761  ttcctcctga  agatctccgc  gacccgctct  ctcgacggtg  gccgcgaggt  cattggagat
8821  acggcccatg  agttgggaga  atgcagtcat  gcccgcctcg  ttccagacgc  ggctgtaaac
8881  cacggccccc  tcggagtctc  ttgcgcgcat  caccacctga  gcgaggttaa  gctccacgtg
8941  tctggtgaag  accgcatagt  tgcataggcg  ctgaaaaagg  tagttgagtg  tggtggcaat
9001  gtgttcggcg  acgaagaaat  acatgatcca  tcgtctcagc  ggcatttcgc  tgacatcgcc
9061  cagagcttcc  aagcgctcca  tggcctcgta  gaagtccacg  gcaaaattaa  aaaactggga
9121  gtttcgcgcg  gacacggtca  attcctcctc  gagaagacgg  atgagttcgg  ctatggtggc
9181  ccgtacttcg  cgttcgaagg  ctcccgggat  ctcttcttcc  tcttctatct  cttcttccac
9241  taacatctct  tcttcgtctt  caggcggggg  cggaggggc  acacggcgac  gtcgacggcg
9301  cacgggcaaa  cggtcgatga  atcgttcaat  gacctctccg  cggcggcggc  gcatggtttc
9361  agtgacggcg  cggccgttct  cgcgcggtcg  cagagtaaaa  acaccgccgc  gcatctcctt
9421  aaagtggtga  ctgggaggtt  ctccgtttgg  gagggagagg  gcgctgatta  tacattttat
9481  taattggccc  gtagggactg  cgcgcagaga  tctgatcgtg  tcaagatcca  cgggatctga
9541  aaacctttcg  acgaaagcgt  ctaaccagtc  acagtcacaa  ggtaggctga  gtacggcttc
9601  ttgtgggcgg  gggtggttat  gtgttcggtc  tgggtcttct  gtttcttctt  catctcggga
9661  aggtgagacg  atgctgctgg  tgatgaaatt  aaagtaggca  gttctaagac  ggcggatggt
9721  ggcgaggagc  accaggtctt  tgggtccggc  ttgctggata  cgcaggcgat  tggccattcc
9781  ccaagcatta  tcctgacatc  tagcaagatc  tttgtagtag  tcttgcatga  gccgttctac
9841  gggcacttct  tcctcacccg  ttctgccatg  catacgtgtg  agtccaaacc  cgcgcattgg
9901  ttgtaccagt  gccaagtcag  ctacgactct  ttcggcgagg  atggcttgct  gtacttgggt
9961  gagggtggct  tgaaagtcat  caaaatccac  aaagcggtgg  taagccccgg  tattaatggt
10021 gtaagcacag  ttggccatga  ctgaccagtt  aactgtctgg  tgaccagggc  gcacgagctc
10081 ggtgtattta  aggcgcgaat  aggcgcggat  gtcaaagctg  taatcgttgc  aggtgcgcac
10141 cagatactgg  taacctataa  gaaaatgcgg  cggtggttgg  cggtagagag  gccatcgttc
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10261 cctggacatc  caggtgattc  ctgcggcggt  agtagaagcc  cgaggaaact  cgcgtacgcg
10321 gttccaaatg  ttgcgtagcg  gcatgaagta  gttcattgta  ggcacggttt  gaccagtgag
10381 gcgcgcgcag  tcattgatgc  tctatagaca  cggagaaaat  gaaagcgttc  agcgactcga
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10501 tactcgagcc  ggccggagcc  gcggctaacg  tggtattggc  actcccgtct  cgacccagcc
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10741 tgccgctgtg  agcggtgcgg  gacagcccgc  ctatgatctg  gacttggaag  agggcgaagg
10801 actggcacgt  ctaggtgcgc  cttcgcccga  gcggcatccg  cgagttcaac  tgaaaaaaga
10861 ttctcgcgag  gcgtatgtgc  cccaacagaa  cctatttaga  gacagaagcg  gcgaggagcc
10921 ggaggagatg  cgagcttccc  gctttaacgc  gggtcgtgag  ctgcgtcacg  gtttggacag
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11041 cagggcacac  gtggctgcag  ccaaccttgt  atcggcttac  gaacagacag  taaaggaaga
11101 gcgtaatttc  caaaagtctt  ttaataatca  tgtgcgaacc  ctcattgccc  gcgaagaagt
11161 cacccttggt  ttgatgtcatt  tgtgggattt  gatggaagct  atcattcaga  accctactag
11221 caaacctctg  accgcacagc  tgtttctggt  ggtgcaacac  agcagagaca  atgaggcttt
11281 cagagaggcg  ctgctcaaca  tcaccgaacc  cgaggggaga  tggttgtatg  atcttatcaa
11341 cattctacag  agtatcatag  tgcaggagcg  gagcctgggc  ctggccgaga  aggtggctgc
11401 catcaattac  tcggttttga  gcttgggaaa  gtattacgct  cgcaagatct  acaagactcc
11461 atacgttccc  atagacaagg  aggtgaagat  agatgggttc  tacatgcgca  tgacgctgaa
11521 ggtgttgacc  ctgagcgatg  atcttggggt  gtaccgcaat  gacagaatgc  atcgcgcggt
11581 gagcgccagc  aggaggcgcg  agttaagcga  cagggaactg  atgcacagtt  tgcaaagagc
11641 tctaactgga  gctggaaccg  agggtgagaa  ttactttgat  atgggagctg  acttgcagtg
```

FIG. 28A-3

```
11701 gcagcctagt cgcagggctc tgaacgccgc gacggcagga tgtgagcttc cttacataga
11761 agaggcggat gaaggcgagg aggaagaggg cgagtacttg gaagactgat ggcacaaccc
11821 gtgttttttg ctagatggaa cagcaagcac cggatcccgc aatgcgggcg cgcgctgcaga
11881 gccagccgtc cggcattaac tcctcggacg attggaccca ggccatgcaa cgtatcatgg
11941 cgttgacgac tcgcaacccc gaagcctta dacagcaacc ccaggccaac cgtctatcgg
12001 ccatcatgga agctgtagtg ccttcccgct ctaatcccac tcatgagaag gtcctggcca
12061 tcgtgaacgc gttggtggag aacaaagcta ttcgtccaga tgaggccgga ctggtataca
12121 acgctctctt agaacgcgtg gctcgctaca acagtagcaa tgtgcaaacc aatttggacc
12181 gtatgataac agatgtacgc gaagccgtgt ctcagcgcga aaggttccag cgcgatgcca
12241 acctgggttc gctggtggcg ttaaatgctt tcttgagtac tcagcctgct aatgtgccgc
12301 gtggtcaaca ggattatact aacttttaa gtgctttgag actgatggta tcagaagtac
12361 ctcagagcga agtatatcag tccggtcctg attacttctt tcagactagc agacagggct
12421 tgcagacggt aaatctgagc caagctttta aaaaccttaa aggtttgtgg ggagtgcatg
12481 ccccggtagg agaaagagca accgtgtcta gcttgttaac tccgaactcc cgcctattat
12541 tactgttggt agctcctttc accgacagcg gtagcatcga ccgtaattcc tatttgggtt
12601 acctactaaa cctgtatcgc gaagccatag ggcaaagtca ggtggacgag cagacctatc
12661 aagaaattac ccaagtcagt cgcgctttgg gacaggaaga cactggcagt ttggaagcca
12721 ctctgaactt cttgcttacc aatcggtctc aaaagatccc tcctcaatat gctcttactg
12781 cggaggagga gaggatcctt agatatgtgc agcagagcgt gggattgttt ctgatgcaag
12841 aggggggcaac tccgactgca gcactggaca tgacagcgcg aaatatggag cccagcatgt
12901 atgccagtaa ccgacctttc attaacaaac tgctggacta cttgcacaga gctgccgcta
12961 tgaactctga ttatttcacc aatgccatct taaacccgca ctggctgccc ccacctggtt
13021 tctacacggg cgaatatgac atgcccgacc ctaatgacgg atttctgtgg gacgacgtgg
13081 acagcgatgt tttttcacct ctttctgatc atcgcacgtg gaaaaaggaa ggcggcgata
13141 gaatgcattc ttctgcatcg ctgtccgggg tcattggtgc taccgcggct gagcccgagt
13201 ctgcaagtcc ttttcctagt ctacccttt ctctacacag tgtacgtagc agcgaagtgg
13261 gtagaataag tcgcccgagt ttaatgggcg aagaggagta cctaaacgat tccttgctca
13321 gaccggcaag agaaaaaaat ttcccaaaca atggaataga aagtttggtg gataaaatga
13381 gtagatggaa gacttatgct caggatcaca gagacgagcc tgggatcatg gggactacaa
13441 gtagacgag ccgtagacgc cagcgccatg acagacagag gggtcttgtg tgggacgatg
13501 aggattcggc cgatgatagc agcgtattga acttgggtgg gagaggaagg ggcaacccgt
13561 ttgctcattt gcgccctcgc ttgggtggta tgttgtaaaa aaaaataaaa aagaaaaaac
13621 tcaccaaggc catggcgacg agcgtacgtt cgttcttctt tattatctgt gtctagtata
13681 atgaggcgag tcgtgctagg cggagcggtg gtgtatccgg agggtcctcc tccttcgtac
13741 gagagcgtga tgcagcagca gcaggcgacg gcggtgatgc aatccccact ggaggctccc
13801 tttgtgcctc cgcgatacct ggcacctacg gagggcagaa acagcattcg ttactcggaa
13861 ctggcacctc agtacgatac caccaggttg tatctggtgg acaacaagtc ggcggacatt
13921 gcttctctga actatcagaa tgaccacagc aacttcttga ccacggtggt gcaaaacaat
13981 gactttaccc ctacggaagc cagcacccag accattaact ttgatgaacg atcgcggtgg
14041 ggcggtcagc taaaaaccat catgcatact aacatgccca acgtgaacga gtatatgttt
14101 agtaacaagt tcaaagcgcg tgtgatggtg tccagaaaac ctcctgaggg tgttagagta
14161 gacgataatt atgatcataa gcaagatatt ctaaaatacg agtggttcga gtttactttg
14221 ccagaaggca acttttcggt cactatgact atcgacttga tgaacaatgc catcatagac
14281 aattacttga aagtgggcag acagaatgga gtgttggaaa gtgacattgg tgttaagttc
14341 gacactagga acttcaagtt gggatgggat ccagaaacta agttgatcat gcctggggtt
14401 tacacctatg aggccttcca tcctgacatc gtattgctgc ctggctgcgg agtggacttt
14461 accgaaagcc gtctgagcaa ccttcttggc attagaaaga aacacccatt ccaagagggt
14521 tttaagatct tgtatgagga tttagaagga ggaaatattc cagcccttt ggatgtagat
14581 gcttatgaga acagcaagaa agatcaaaaa gccaaaatag aagctgctgc agaagctaaa
14641 gcaaacatag ttgccaacga tccggtaagg gtggctaacg ctagtgaaat caggggagac
14701 agttttgccg caacatccgt tccgactaaa gaatcattat tggatgatgt gtctcaaaac
14761 atagagttaa aactcactat taagcctgtg gaaaaagatg gcaaaaacag aagttacaat
14821 gtgttggaag ataaaatcaa cacggcctat cgcagttggt accttcgta caattatggc
14881 gaccccgaaa aaggagtgcg ttcctggaca ttgctcacca cctcagatgt cacctgcgga
14941 gcggagacagg tctactggtc gcttccagac atgatgcagg atcctgtcac tttccgctcc
15001 actagacaag tcagtaacta ccctgtggtg ggtgcagagc ttatgcccgt ctttttcaaag
15061 agcttctaca acgaacaagc tgtgtactcc cagcagctcc gccagtccac ctcgcttacg
15121 cacgtcttca accgctttcc tgagaaccag attttaatcc gtccgccggc gcccacaatt
15181 accaccgtca gtgaaaacgt tcctgctctc acagatcacg ggaccctgcc gttgcgcagc
15241 agtatccggg gagtccaacg tgtgaccgtt actgacgcca gacgccgcac ctgtccctac
15301 gtgtacaagg cactgggcat agtcgcaccg cgcgtccttt caagccgcac tttctaaaaa
15361 aaaaaaaaaa atgtccgttc ttatctcgcc cagtaataac accggttggg gtctgcgcgc
15421 tcccagcaag atgtacggag gcgcacgcaa acgttctacc caacatcccg tgcgtgttcg
15481 cgggcatttt cgcgctccat ggggtgccct caagggccgc actcgcgttc gaaccaccgt
15541 cgatgatgta atcgatcagg tggttgccga cgcccgtaat tatactccta ctgcgcctac
```

FIG. 28A-4

```
15601 atctactgtg gacgcagtta ttgacagtgt agtggctgac gctcgcaact atgctcgacg
15661 taagagccgg cgaaggcgca ttgccagacg tcaccgagct accactgcca tgcgagcagc
15721 aagagctctg ctacgaagag ctagacgcgt ggggcgaaga gccatgctta gggcggccag
15781 acgtgcagct tcggggcgcca gcgccggcag gtcccgcagg caagcagccg ctgtcgcagc
15841 ggcgactatt gccgacatgg cccaatcgcg aagaggcaat gtatactggg tgcgtgacgc
15901 tgccaccggt caacgtgtac ccgtgcgcac ccgtcccccт cgcacttaga agatactgag
15961 cagtctccga tgttgtgtcc cagcggcgag gatgtccaag cgcaaataca aggaagaaat
16021 gctgcaggtt atcgcacctg aagtctacgg ccaaccgttg aaggatgaaa aaaaaccccg
16081 caaaatcaag cgggtaaaaa aggacaaaaa agaagaggaa gatggcgatg atgggctggc
16141 ggagtttgtg cgcgagtttg ccccacggcg acgcgtgcaa tggcgtgggc gcaaagttcg
16201 acatgtgttg agacctggaa cttcggtggt ctttacaccc ggcgagcgtt caagcgctac
16261 ttttaagcgt tcctatgatg aggtgtacgg ggatgatgat attcttgagc aggcagctga
16321 ccgattaggc gagtttgctt atggcaagcg tagtagaata aatcccaagg atgaaacagt
16381 gtccatacee ttggatcatg gaaatcccac ccctagtctt aaaccggtca cttttgcagca
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16561 ggatccagat attcaacctg aggttaaagt gagacccatt aagcaggtag cgcctggtct
16621 gggagtacaa actgtagaca ttaaaattcc cactgaaagt atggaagtgc aaactgaacc
16681 cgcaaagcct actgccacct ccactgaagt gcaaacggac ccatggatgc ccatgcctat
16741 tacaactgac gccgtcggtc ccactcgaag atcccgacga aagtacggtc cagcaagtct
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16861 tcgctactat cgcagccgaa acagtacttc ccgccgtcgc cgcaagacac ctgcaaatcg
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17041 cacttaatca atgttgccgc tgcctccttg cagatatggc cctcacttgt cgccttcgcg
17101 ttcccatcac tggttaccga ggaagaaact cgcgccgtag aagagggatg ttggggcgcg
17161 gaatgcgacg ctacaggcga cggcgtgcta tccgcaagca attgcgggt ggttttttgc
17221 cagccttaat tccaattatc gctgctgcga ttggcgcaat accaggcata gcttccgtgg
17281 cggttcaggc ctcgcaacga cattgacatt ggaaaaaaaa aaaacgtata aataaaaaat
17341 acaatggact ctgacactcc tggtactgtg actatgtttt cttagagatg gaagacatca
17401 attttttcatc cttggctccg cgacacggca cgaagccgta catggcgacc tggagcgaca
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17581 aggcgcttag aaataaactt aaagaccaga acttccaaca aaaagtagtc gatgggatag
17641 cttccggtat caatggagtg gtagatttgg ctaaccaggc tgtgcagaaa aagataaaca
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17941 tggatttgcc ccctcctcct gctgctactg ctgtacccgc ttctaagcct gtcgctgccc
18001 cgaaaccagt cgccgtagcc aggtcacgtc ccgggggcgc tcctcgtcca aatgcacact
18061 ggcaaaatac tctgaacagc atcgtgggtc taggcgtgca aagtgtaaaa cgccgtcgct
18121 gctttaatt aaatatggag tagcgcttaa cttgcctatc tgtgtatatg tgtcattaca
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18241 aagatggcca ccccatcgat gctgccccaa tgggcataca tgcacatcgc cggacaggat
18301 gcttcggagt acctgagtcc gggtctggtg cagttcgccc gcgccacaga cacctacttc
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18421 cgtagccagc ggctcatgtt gcgcttcgtg cccgttgacc gggaggacaa tacatactct
18481 tacaaagtgc ggtacaccct ggccgtgggc gacaacagag tgctggatat ggccagcacg
18541 ttctttgaca ttaggggcgt gttggacaga ggtcccagtt ttaaacccta ttctggtacg
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18721 gcaacataca ctttttggtaa tgctccagta aaagccgagg ctgaaatcac aaaagacgga
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18901 gagtatggag ggaggggttct taaacctgaa actaaaatga aaccctgcta cggatctttt
18961 gctaaaccta ctaatattaa aggaggtcag gcaacaaaga aaccaaaaga agacgatggc
19021 actaacaaca tcgagtatga cattgacatg aacttctttg acttaagatc acaaagatca
19081 gaactcaaac ctaaaattgt aatgtatgca gaaaatgtgg acctggaatg tccagatact
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19321 gttgacttgc aggacagaaa cacagaactg tcttaccaac tcttgcttga ctctctgggc
19381 gacagaacca gatactttag catgtggaat caggctgtgg acagttatga tcctgatgta
19441 cgtgttattg aaaatcatgg tgtggaagat gaacttccca actattgttt ccgttggat
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19621  gaaattaacc  ttcaagccaa  tctatggcga  agtttccttt  attccaatgt  ggctctatat
19681  ctcccagact  cgtacaaata  caccccgtcc  aatgtcactc  ttccagaaaa  caaaaacacc
19741  tacgactaca  tgaacgggcg  ggtggtgccg  ccatctctag  tagacaccta  tgtgaacatt
19801  ggtgccaggt  ggtctctgga  tgccatggac  aatgtcaacc  cattcaacca  ccaccgtaac
19861  gctggcttgc  gttaccgatc  catgcttctg  ggtaacggac  gttatgtgcc  tttccacata
19921  caagtgcctc  aaaaattctt  cgctgttaaa  aacctgctgc  ttctcccagg  ctcctacact
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20281  accagactga  aaaccaaaga  aactccctct  ttggggtctg  gatttgaccc  ctacttcgtc
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20461  aacgaatttg  aaataaagcg  cactgtggat  ggcgaaggct  acaacgtagc  ccaatgcaac
20521  atgaccaaag  actggttctt  ggtacagatg  ctcgccaact  acaacatcgg  ctatcagggc
20581  ttctacattc  cagaaggata  caaagatcgc  atgtattcat  ttttcagaaa  cttccagccc
20641  atgagcaggc  aggtggttga  tgaggtcaat  tacaaagact  tcaaggccgt  cgccataccc
20701  taccaacaca  acaactctgg  ctttgtgggt  tacatggctc  cgaccatgcg  tcaaggtcaa
20761  ccctatcccg  ctaactatcc  ctatccactc  attggaacaa  ctgccgtaaa  tagtgttacg
20821  cagaaaaagt  tcttgtgtga  cagaaccatg  tggcgcatac  cgttctcaag  caacttcatg
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20941  ctggacatga  cctttgaggt  ggatcccatg  gatgagccca  ccctgcttta  tcttctcttc
21001  gaagtttteg  acgtggtcag  agtgcatcag  ccacaccgcg  gcatcatcga  ggcagtctac
21061  ctgcgtacac  cgttctcggc  cggtaacgct  accacgtaag  aagcttcttg  cttcttgcaa
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21301  acggggggag  agcactggtt  ggctttcggt  tggaacccac  gttctaacac  ctgctacctt
21361  tttgatcctt  ttggattctc  ggatgatcgt  ctcaaacaga  tttaccagtt  tgaatatgag
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21601  actggagtgc  caaacaacat  gcttcattct  cctaaagtcc  agcccaccct  gtgtgacaat
21661  caaaaagcac  tctaccattt  tctcaatacc  cattcgcctt  attttcgctc  tcatcgtaca
21721  cacatcgaaa  gggccactgc  gttcgaccgt  atggatgtgc  aataatgatt  catgtaaaca
21781  acgtgttcaa  taaacagcac  tttatttttt  acatgtatcg  aggctctgga  ttacttattt
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21901  cggaactgat  acttgggttg  ccacttgaat  tcgggaatca  ccaacttggg  aaccggtata
21961  tcgggcagga  tgtcactcca  cagctttctg  gtcagctgca  aagctcccag  caggtcagga
22021  gccgaaatct  tgaaatcaca  attaggacca  gtgctctgag  cgcgagagtt  gcggtacacc
22081  ggattgcagc  actgaaacac  catcagcgac  ggatgtctta  cgcttgccag  cacggtggga
22141  tctgcaatca  tgcccacatc  cagatcttca  gcattggcaa  tgctgaacgg  ggtcatcttg
22201  caggtctgcc  tacccatggc  gggcacccaa  ttaggcttgt  ggttacaatc  gcagtgcagg
22261  gggatcagta  tcatcttggc  ctgatcctgt  ctgattcctg  gatacacggc  tctcatgaaa
22321  gcatcatatt  gcttgaaagc  ctgctgggct  ttactaccct  cggtataaaa  catcccgcag
22381  gacctgctcg  aaaactggtt  agctgcgcag  ccggcatcat  tcacacagca  gcgggcgtca
22441  ttgttggcta  tttgcaccac  acttctgccc  cagcggtttt  gggtgatttt  ggttcgctcg
22501  ggattctcct  tcaaggctcg  ttgtccgttc  tcgctggcca  catccatctc  gataatctgc
22561  tccttctgaa  tcataatatt  gccatgcaag  cacttcagct  tgccctcata  atcattgcag
22621  ccatgaggcc  acaacgcaca  gcctgtacat  tcccaattat  ggtgggcgat  ctgagaaaaa
22681  gaatgtatca  ttccctgcag  aaatcttccc  atcatcgtgc  tcagtgtctt  gtgactagtg
22741  aaagttaact  ggatgcctcg  gtgctcctcg  ttcacgtact  ggtgacagat  gcgcttgtat
22801  tgttcgtgct  gctcaggcat  tagtttaaaa  gaggttctaa  gttcgttatc  cagcctgtac
22861  ttctccatca  gcagacacat  cacttccatg  cctttctccc  aagcagacac  cagggggcaag
22921  ctaatcggat  tcttaacagt  gcaggcagca  gctcctttag  ccagagggtc  atctttggcg
22981  atcttctcaa  tgcttctttt  gccatccttc  tcaacgatgc  gcacgggcgg  gtagctgaaa
23041  cccactgcta  caagttgcgc  ctcttctctt  tcttcttcgc  tgtcttgact  gatgtcttgc
23101  atgggacat   gtttggtctt  ccttggcttc  tttttcgggg  gtatcggagg  aggaggactg
23161  tcgctccgtt  ccggagacag  ggaggattgt  gacgtttcgc  tcaccattac  caactgactg
23221  tcggtagaag  aacctgaccc  cacacggcga  caggtgtttc  tcttcggggg  cagaggtgga
23281  ggcgattgcg  aagggctgcg  gtccgacctg  gaaggcggat  gactggcaga  accccttccg
23341  cgttcggggg  tgtgctccct  gtggcggtcg  cttaactgat  ttccttcgcg  gctggccatt
```

<div align="center">FIG. 28A-6</div>

```
23401  gtgttctcct  aggcagagaa  acaacagaca  tggaaactca  gccattgctg  tcaacatcgc
23461  cacgagtgcc  atcacatctc  gtcctcagcg  acgaggaaaa  ggagcagagc  ttaagcattc
23521  caccgcccag  tcctgccacc  acctctaccc  tagaagataa  ggaggtcgac  gcatctcatg
23581  acatgcagaa  taaaaaagcg  aaagagtctg  agccagacat  cgaacaagac  ccgggctatg
23641  tgacaccggt  ggaacacgag  gaagagttga  aacgctttct  agagagagag  gatgaaaact
23701  gcccaaaaca  gcaagcggat  aactatcacc  aagatgctgg  aaatagggat  cagaacaccg
23761  actacctcat  agggcttgac  ggggaagacg  cgctccttaa  acatctagca  agacagtcac
23821  tcatagtcaa  ggatgcatta  ttggacagaa  ctgaagtgcc  catcagtgtc  gaagagctca
23881  gccgcgccta  cgagcttaac  ctattttcac  ctcgtactcc  ccccaaacgt  cagccaaacg
23941  gcacctgcga  gccaaatcct  cgcttaaact  tttatccagc  ttttgctgtg  ccagaagtac
24001  tggctaccta  tcacatcttt  tttaaaaatc  aaaaaattcc  agtctcctgc  cgcgctaatc
24061  gcacccgcgc  cgatgcccta  ctcaatctgg  gacctggttc  acgcttacct  gatatagctt
24121  ccttggaaga  ggttccaaag  atcttcgagg  gtctgggcaa  taatgagact  cgggccgcaa
24181  atgctctgca  aaagggagaa  aatggcatgg  atgagcatca  cagcgttctg  gtggaattgg
24241  aaggcgataa  tgccagactc  gcagtactca  agcgaagcgt  cgaggtcaca  cactttgcat
24301  accccgctgt  caacctgccc  cctaaagtca  tgacggccgt  catggaccag  ttactcatta
24361  agcgcgcaag  tccccttttca  gaagacatgc  atgacccaga  tgcctgtgat  gagggtaaac
24421  cagtggtcag  tgatgagcag  ctaacccgat  ggctgggcac  cgactctccc  cgggatttgg
24481  aagagcgtcg  caagcttatg  atggccgtgg  tgctggttac  cgtagaacta  gagtgtcttc
24541  ggcgtttctt  taccgattca  gaaaccttgc  gcaaactcga  agagaatctg  cactacactt
24601  ttagacacgg  ctttgtgcgg  caggcatgca  agatatctaa  cgtggaactc  accaacctgg
24661  tttcctacat  gggtattctg  catgagaatc  gcctaggaca  aagcgtgctg  cacagcaccc
24721  ttaaggggga  agcccgccgt  gattacatcc  gcgattgtgt  ttatctctac  ctgtgccaca
24781  cgtggcaaac  cggcatgggt  gtatggcgac  aatgtttaga  agaacagaac  ctgaaagagc
24841  taaacaagct  cttacagaaa  tctcttaagg  ttctgtggac  agggttcgac  gagcgcaccg
24901  tcgcttccga  cctggcagac  ctcatcttcc  cagagcgtct  cagggttact  ttgcgaaacg
24961  gactgcctga  ctttatgagc  cagagcatgc  ttaacaattt  tcgctctttc  atcctggaac
25021  gctccggtat  cctgcccgcc  acctgctgcg  cactgccctc  cgactttgtg  cctctcacct
25081  accgcgaatg  cccccccgccg  ctatggagtc  actgctacct  gttccgtctg  gccaactacc
25141  tctcctacca  ctcggatgtg  atcgaggatg  tgagcggaga  cggcttgctg  gagtgtcact
25201  gccgctgcaa  tctgtgcacg  ccccaccggt  ccctagcttg  caacccccag  ttgatgagcg
25261  aaacccagat  aataggcacc  tttgaattgc  aaggcccccag  cagccaaggc  gatgggtctt
25321  ctcctgggca  aagtttaaaa  ctgacccccgg  gactgggac  ctccgcctac  ttgcgcaagt
25381  ttgccccgga  agattaccac  ccctatgaaa  tcaagttcta  tgaggaccaa  tcacagcctc
25441  cgaaagccga  actttcggcc  tgcgtcatca  cccagggggc  aattctggcc  caattgcaag
25501  ccatccaaaa  atcccgccaa  gaatttctac  tgaaaaaggg  taagggggtc  taccttgacc
25561  cccagaccgg  cgaggaactc  aacacaaggt  tccctcagga  tgtcccaacg  acgagaaagc
25621  aagaagttga  aggtgcagcc  gccgccccca  gaagatatgg  aggaagattg  ggacagtcag
25681  gcagaggaag  cggaggagga  ggacagtctg  gaggacagtc  tggaggaaga  cagtttggag
25741  gaggaaaacg  aggaggcaga  ggaggtggaa  gaagtaaccg  ccgacaaaca  gttatcctcg
25801  gctgcggaca  caagcaacag  cgctaccatc  tccgctccga  gtcgaggaac  ccggcggcgt
25861  cccagcagta  gatgggacga  gaccggacgc  ttcccgaacc  caaccagcgc  ttccaagacc
25921  ggtaagaagg  atcggcaggg  atacaagtcc  tggcgggggc  ataagaatgc  catcatctcc
25981  tgcttgcatg  agtgcggggg  caacatatcc  ttcacgcggc  gctacttgct  attccaccat
26041  ggggtgaact  ttccgcgcaa  tgttttgcat  tactaccgtc  acctccacag  cccctactat
26101  agccagcaaa  tcccggcagt  ctcgacagat  aaagacagcg  gcggcgacct  ccaacagaaa
26161  accagcagcg  gcagttagaa  aatacacaac  aagtgcagca  acaggaggat  taaagattac
26221  agccaacgag  ccagcgcaaa  cccgagagtt  aagaaatcgg  atctttccaa  ccctgtatgc
26281  catcttccag  cagagtcggg  gccaagagca  ggaactgaaa  ataaaaaacc  gatctctgcg
26341  ttcgctcacc  agaagttgtt  tgtatcacaa  gagcgaagat  caacttcagc  gcactctcga
26401  ggacgccgag  gctctcttca  acaagtactg  cgcgctgact  cttaaagagt  aggcagcgac
26461  cgcgcttatt  caaaaaaggc  gggaattaca  tcatcctcga  catgagtaaa  gaaattccca
26521  cgccttacat  gtggagttat  cagccccaaa  tgggattggc  ggcaggcgcc  tcccaggact
26581  actccacccg  catgaattgg  ctcagcgccg  ggccttctat  gatttctcga  gttaatgata
26641  tacgcgccta  ccgaaaccaa  atacttttgg  aacagtcagc  tcttaccacc  acgccccgcc
26701  aacaccttaa  tcccagaaat  tggcccgccg  ccctagtgta  ccaggaaagt  cccgctccca
26761  ccactgtatt  acttcctcga  gacgcccagg  ccgaagtcca  aatgactaat  gcaggtgcgc
26821  agttagcggg  cggctccacc  ctatgtcgtc  acaggcctcg  gcataatata  aaacgcctga
26881  tgatcagagg  ccgaggtatc  cagctcaacg  acgagtcggt  gagctctccg  cttggtctac
26941  gaccagacgg  aatctttcag  attgccggct  gcgggagatc  ttccttcacc  cctcgtcagg
27001  ctgttctgac  tttggaaagt  tcgtcttcgc  aaccccgctc  gggcggaatc  gggaccgttc
27061  aatttgtgga  ggagtttact  ccctctgtct  acttcaaccc  cttctccgga  tctcctgggc
27121  actacccgga  cgagttcata  ccgaacttcg  acgcgattag  cgagtcagtg  gacggctacg
27181  attgatgtct  ggtgacgcgg  ctgagctatc  tcggctgcga  catctagacc  actgccgccg
27241  ctttcgctgc  tttgcccggg  aactcattga  gttcatctac  ttcgaactcc  ccaaggatca
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FIG. 28A-7

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27301 ccctcaaggt ccggcccacg gagtgcggat tactatcgaa ggcaaaatac actctcgcct
27361 gcaacgaatt ttctcccagc ggcccgtgct gatcgagcga gaccagggaa acaccacggt
27421 ttccatctac tgcatttgta atcaccccgg attgcatgaa agcctttgct gtcttatgtg
27481 tactgagttt aataaaaact gaattaagac tctcctacgg actgccgctt cttcaacccg
27541 gattttacaa ccagaagaac gaaactttc ctgtcgtcca ggactctgtt aacttcacct
27601 ttcctactca caaactagaa gctcaacgac tacaccgctt ttccagaagc attttcccta
27661 ctaatactac tttcaaaacc ggaggtgagc tccaaggtct tcctacagaa aacccttggg
27721 tggaagcggg ccttgtagtg ctaggaattc ttgcgggtgg gcttgtgatt attctttgct
27781 acctatacac accttgcttc actttcctag tggtgttgtg gtattggttt aaaaaatggg
27841 gcccatacta gtcttgcttg ttttactttc gcttttggaa ccgggttctg ccaattacga
27901 tccatgtcta gacttcgacc cagaaaactg cacacttact tttgcacccg acacaagccg
27961 catctgtgga gttcttatta agtgcggatg ggaatgcagg tccgttgaaa ttacacacaa
28021 taacaaaacc tggaacaata ccttatccac cacatgggag ccaggagttc ccgagtggta
28081 cactgtctct gtccgaggtc ctgacggttc catccgcatt agtaacaaca ctttcatttt
28141 ttctgaaatg tgcgatctgg ccatgttcat gagcaaacag tattctctat ggcctcctag
28201 caaggacaac atcgtaacgt tctccattgc ttattgcttg tgcgcttgcc ttcttactgc
28261 tttactgtgc gtatgcatac acctgcttgt aaccactcgc atcaaaaacg ccaataacaa
28321 agaaaaaatg ccttaacctc tttctgttta cagacatggc ttctcttaca tctctcatat
28381 ttgtcagcat tgtcactgcc gctcacggac aaacagtcgt ctctatccct ctaggacata
28441 attacactct cataggaccc ccaatcactt cagaggtcat ctggaccaaa ctgggaagcg
28501 ttgattactt tgatataatc tgcaacaaaa caaaaccaat aatagtaact tgcaacatac
28561 aaaatcttac attgattaat gttagcaaag tttacagcgg ttactattat ggttatgaca
28621 gatacagtag tcaatataga aattacttgg ttcgtgttac ccagttaaaa accacgaaaa
28681 tgccaaatat ggcaaagatt cgatccgatg acaattctct agaaactttt acatctccca
28741 ccacacccga cgaaaaaaac atcccagatt caatgattgc aattgttgca gcggtggcag
28801 tggtgatggc actaataata atatgcatgc ttttatatgc ttgtcgctac aaaaagtttc
28861 atcctaaaaa acaagatctc ctactaaggc ttaacattta atttcttttt atacagccat
28921 ggtttccact accacattcc ttatgcttac tagtcttgca actctgactt ctgctcgctc
28981 acacctcact gtaactatag gctcaaactg cacactaaaa ggacctcaag gtggtcatgt
29041 cttttggtgg agaatatatg acaatggatg gtttacaaaa ccatgtgacc aacctggtag
29101 attttctgc aacggcagag acctaaccat tatcaacgtg acagcaaatg acaaaggctt
29161 ctattatgga accgactata aaagtagttt agattataac attattgtac tgccatctac
29221 cactccagca ccccgcacaa ctactttctc tagcagcagt gtcgctaaca atacaatttc
29281 caatccaacc tttgccgcgc tttaaaacg cactgtgaat aattctacaa cttcacatac
29341 aacaatttcc acttcaacaa tcagcattat cgctgcagtg acaattggaa tatctattct
29401 tgttttttacc ataacctact acgcctgctg ctatagaaaa gacaaacata aaggtgatcc
29461 attacttaga tttgatattt aatttgttct tttttttttt atttacagta tggtgaacac
29521 caatcatggt acctagaaat ttcttcttca ccatactcat ttgtgcattt aatgtttgcg
29581 ctactttcac agcagtagcc acagcaaccc cagactgtat aggagcattt gcttcctatg
29641 cactttttgc tttgttact tgcatctgcg tatgtagcat agtctgcctg gttattaatt
29701 ttttccaact tctagactgg atccttgtgc gaattgccta cctgcgccac catcccgaat
29761 accgcaacca aaatatcgcg gcacttctta gactcatcta aaaccatgca ggctatacta
29821 ccaatatttt tgcttctatt gcttccctac gctgtctcaa ccccagctgc ctatagtact
29881 ccaccagaac accttagaaa atgcaaattc caacaaccgt ggtcatttct tgcttgctat
29941 cgagaaaaat cagaaattcc cccaaattta ataatgattg ctggaataat taatataatc
30001 tgttgcacca taatttcatt tttgatatac cccctatttg attttggctg gaatgctccc
30061 aatgcacatg atcatccaca agacccagag gaacacattc ccctacaaaa catgcaacat
30121 ccaatagcgc taatagatta cgaaagtgaa ccacacccc cactactccc tgctattagt
30181 tacttcaacc taaccggcgg agatgactga aacactcacc acctccaatt ccgccgagga
30241 tctgctcgat atggacggcc gcgtctcaga acagcgactt gcccaactac gcatccgcca
30301 gcagcaggaa cgcgcggcca aagagctcag agatgtcatc caaattcacc aatgcaaaaa
30361 aggcatattc tgtttggtaa aacaagccaa gatatcctac gagatcaccg ctactgacca
30421 tcgcctctct tacgaacttg gcccccaacg acaaaaattt acctgcatgg tgggaatcaa
30481 ccccatagtt atcacccagc aaagtggaga tactaagggt tgcattcact gctcctgcga
30541 ttccatcgag tgcacctaca ccctgctgaa gacccctatgc ggcctaagag acctgctacc
30601 aatgaattaa aaaatgatta ataaaaaatc acttacttga aatcagcaat aaggtctctg
30661 ttgaaatttt ctcccagcag cacctcactt ccctcttccc aactcggta ttctaaaccc
30721 cgttcagcgg catactttct ccatacttta aaggggatgt caaatttttag ctcctctcct
30781 gtacccacaa tcttcatgtc tttcttccca gatgaccaag agagtccggc tcagtgactc
30841 cttcaaccct gtctacccct atgaagatga agcacctcc caacacccct ttataaaccc
30901 agggtttatt tccccaaatg gcttcacaca agcccagac ggagttctta ctttaaaatg
30961 tttaacccca ctaacaacca caggcggatc tctacagcta aaagtgggag ggggacttac
31021 agtggatgac actgatggta ccttacaaga aaacatacgt gctacagcac ccattactaa
31081 aaataatcac tctgtagaac tatccattgg aaatggatta gaaactcaaa acaataaact
31141 atgtgccaaa ttgggaaatg ggttaaaatt taacaacggt gacatttgta taaaggatag
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FIG. 28A-8

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31201 tattaacacc ttatggactg gaataaaccc tccacctaac tgtcaaattg tggaaaacac
31261 taatacaaat gatggcaaac ttactttagt attagtaaaa aacggagggc ttgttaatgg
31321 ctacgtgtct ctagttggtg tatcagacac tgtgaaccaa atgttcacac aaaagacagc
31381 aaacatccaa ttaagattat attttgactc ttctggaaat ctattaactg atgaatcaga
31441 cttaaaaatt ccacttaaaa ataaatcttc tacagcgacc agtgaaactg tagccagcag
31501 caaagccttt atgccaagta ctacagctta tcccttcaac accactacta gggatagtga
31561 aaactacatt catggaatat gttactacat gactagttat gatagaagtc tatttccctt
31621 gaacatttct ataatgctaa acagccgtat gatttcttcc aatgttgcct atgccataca
31681 atttgaatgg aatctaaatg caagtgaatc tccagaaagc aacatagcta cgctgaccac
31741 atcccccttt ttctttttctt acattacaga agacgacaac taaaataaag tttaagtgtt
31801 tttatttaaa atcacaaaat tcgagtagtt attttgcctc caccttccca tttgacagaa
31861 tacaccaatc tctccccacg cacagcttta aacatttgga taccattaga gatagacatt
31921 gttttagatt ccacattcca aacagtttca gagcgagcca atctggggtc agtgatagat
31981 aaaaatccat cgcgatagtc ttttaaagcg ctttcacagt ccaactgctg cggatgcgaa
32041 tccggagtct ggatcacggt catctggaag aagaacgatg ggaatcataa tccgaaaacg
32101 gtatcggacg attgtgtctc atcaaaccca caagcagccg ctgtctgcgt cgctccgtgc
32161 aactgctgtt tatgggatca gggtccacag tgtcctgaag catgatttta atagcccttа
32221 acatcaactt tctggtgcga tgcgcgcagc aacgcattct gatttcactc aaatctttgc
32281 agtaggtaca acacattatt acaatattgt ttaataaacc ataattaaaa gcgctccagc
32341 caaaactcat atctgatata atcgcccctg catgaccatc ataccaaagt ttaatataaa
32401 ttaaatgacg ttccctcaaa aacacactac ccacatacat gatctctttt ggcatgtgca
32461 tattaacaat ctgtctgtac catggacaac gttggttaat catgcaaccc aatataacct
32521 tccggaacca cactgccaac accgctcccc cagccatgca ttgaagtgaa ccctgctgat
32581 tacaatgaca atgaagaacc caattctctc gaccgtgaat cacttgagaa tgaaaaatat
32641 ctatagtggc acaacataga cataaatgca tgcatcttct cataattttt aactcctcag
32701 gatttagaaa catatcccag ggaataggaa gctcttgcag aacagtaaag ctggcagaac
32761 aaggaagacc acgaacacaa cttacactat gcatagtcat agtatcacaa tctggcaaca
32821 gcgggtggtc ttcagtcata gaagctcggg tttcattttc ctcacaacgt ggtaactggg
32881 ctctggtgta agggtgatgt ctggcgcatg atgtcgagcg tgcgcgcaac cttgtcataa
32941 tggagttgct tcctgacatt ctcgtatttt gtatagcaaa acgcggccct ggcagaacac
33001 actcttcttc gccttctatc ctgccgctta gcgtgttccg tgtgatagtt caagtacagc
33061 cacactctta agttggtcaa aagaatgctg gcttcagttg taatcaaaac tccatcgcat
33121 ctaattgttc tgaggaaatc atccacggta gcatatgcaa atcccaacca agcaatgcaa
33181 ctggattgcg tttcaagcag gagaggagag ggaagagacg gaagaaccat gttaatttttt
33241 attccaaacg atctcgcagt acttcaaatt gtagatcgcg cagatggcat ctctcgcccc
33301 cactgtgttg gtgaaaaagc acagctaaat caaaagaaat gcgattttca aggtgctcaa
33361 cggtggcttc caacaaagcc tccacgcgca catccaagaa caaaagaata ccaaaagaag
33421 gagcattttc taactcctca atcatcatat tacattcctg caccattccc agataatttt
33481 cagctttcca gccttgaatt attcgtgtca gttcttgtgg taaatccaat ccacacatta
33541 caaacaggtc ccggagggcg ccctccacca ccattcttaa acacaccctc ataatgacaa
33601 aatatcttgc tcctgtgtca cctgtagcga attgagaatg gcaacatcaa ttgacatgcc
33661 cttggctcta agttcttctt taagttctag ttgtaaaaac tctctcatat tatcaccaaa
33721 ctgcttagcc agaagccccc cgggaacaag agcaggggac gctacagtgc agtacaagcg
33781 cagacctccc caattggctc cagcaaaaac aagattggaa taagcatatt gggaaccgcc
33841 agtaatatca tcgaagttgc tggaaatata atcaggcaga gtttcttgta aaaattgaat
33901 aaaagaaaaa tttgccaaaa aaacattcaa aacctctggg atgcaaatgc aataggttac
33961 cgcgctgcgc tccaacattg ttagttttga attagtctgc aaaaataaaa aaaaaacaa
34021 gcgtcatatc atagtagcct gacgaacggg tggataaatc agtctttcca tcacaagaca
34081 agccacaggg tctccagctc gaccctcgta aaacctgtca tggtgattaa acaacagcac
34141 cgaaagttcc tcgcggtgac cagcatgaat aattcttgat gaagcataca atccagacat
34201 gttagcatca gttaacgaga aaaaacagcc aacatagcct ttgggtataa ttatgcttaa
34261 tcgtaagtat agcaaagcca cccctcgcgg atacaaagta aaggcacag gagaataaaa
34321 aatataatta tttctctgct gctgttcagg caacgtcgcc cccggtccct ctaaatacac
34381 atacaaagcc tcatcagcca tggcttacca gacaaagtac agcgggcacg cacaagctct
34441 aaagtcactc tccaacctct ccacaatata tatacacaag ccctaaactg acgtaatggg
34501 agtaaagtgt aaaaaatccc gccaaaccca acacacaccc cgaaactgcg tcaccaggga
34561 aaagtacagt ttcacttccg caatcccaac aagcgtcact tcctctttct cacggtacgt
34621 cacatcccat taacttgcaa cgtcattttc ccacgccgc gccgcccgt ttagccgtta
34681 accccacagc caatcaccac acaccccaca atttttaaaa tcacctcatt tacatattgg
34741 caccattcca tctataaggt atattattga tgatg
SEQ ID NO:  12
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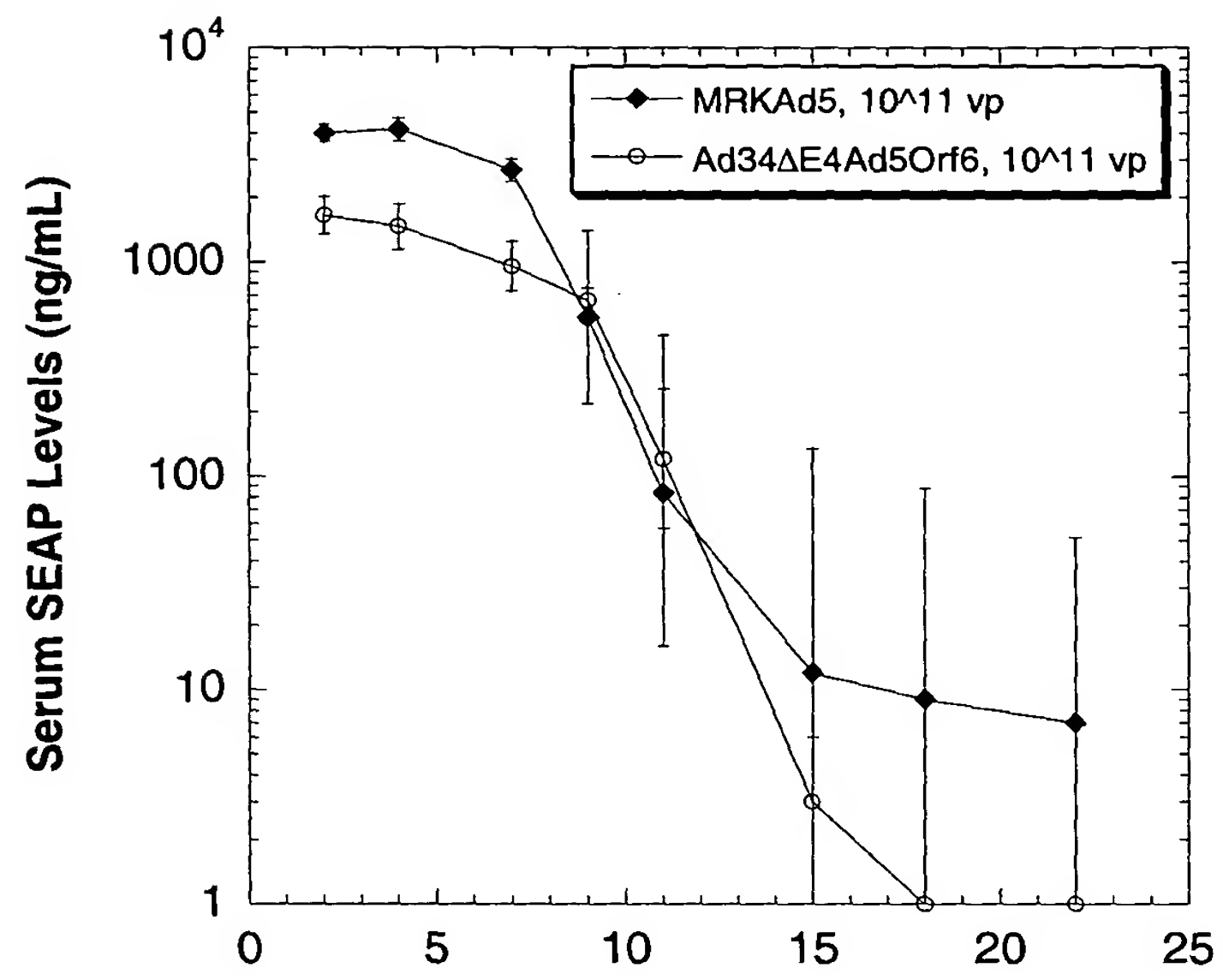

FIG. 28A-9

FIG. 29

Vaccine Wk 0, 4, 24	Monkey ID	Pre		Wk 4		Wk 8		Wk 24		Wk 28		Wk 36	
		Mock	Gag[a]	Mock	Gag	Mock	Gag	Mock	Gag	Mock	Gag	Mock	Gag
MRKAd5gag, 10^11 vp	00C018	1	5	13	1025	0	824	8	756	0	474	0	383
MRKAd5gag, 10^11 vp	00C034	0	4	5	219	5	404	3	445	3	339	0	216
MRKAd5gag, 10^11 vp	00C058	4	4	3	1086	0	440	4	1439	0	2338	0	940
Ad34ΔE1gagΔE4Ad5Orf6, 10^11 vp	00D038	6	8	5	111	1	301	0	224	1	536	0	233
Ad34ΔE1gagΔE4Ad5Orf6, 10^11 vp	00D042	6	30	4	89	4	264	1	73	0	181	0	69
Ad34ΔE1gagΔE4Ad5Orf6, 10^11 vp	00D066	3	18	1	118	1	816	0	429	0	439	0	273

FIG. 30

Vaccine	Monk ID	IFN-γ^+CD4$^+$CD3$^+$ per 10^6 Lymphocytes		IFN-γ^+CD8$^+$CD3$^+$ per 10^6 Lymphocytes	
		Mock	Gag[a]	Mock	Gag[a]
Ad34ΔE1gagΔE4Ad5Orf6	00D038	22	154	130	450
	00D042	32	118	96	171
	00D066	12	238	150	442

FIG. 31

Vaccine T=0, 4 wks	Vaccine T=24 wks	Monkey ID	Pre		T=4 wks		T=8 wks		T=24 wks		T=28 wks		T=32 wks	
			Mock	Gag[a]	Mock	Gag	Mock	Gag	Mock	Gag	Mock	Gag	Mock	Gag
Ad34ΔE1gagΔE4Ad5Orf6, 10^11 vp	Ad35ΔE1gagΔE4Ad5Orf6, 10^10 vp	00D016	4	6	1	84	5	334	5	99	0	306	3	244
Ad34ΔE1gagΔE4Ad5Orf6, 10^11 vp	Ad35ΔE1gagΔE4Ad5Orf6, 10^10 vp	00D044	1	1	8	79	0	374	8	136	0	493	1	253
Ad34ΔE1gagΔE4Ad5Orf6, 10^11 vp	Ad35ΔE1gagΔE4Ad5Orf6, 10^10 vp	00D064	4	6	1	125	8	655	6	145	0	351	1	236
Naïve		00D087	1	1	3	3	8	54	6	8	5	5	3	0

FIG. 32

Vaccine (T=0, 4 Wks)	Vaccine (T=24 Wk)	Monkey ID	IFN-γ^+CD4$^+$CD3$^+$ per 10^6 Lymphocytes		IFN-γ^+CD8$^+$CD3$^+$ per 10^6 Lymphocytes	
			Mock	Gag	Mock	Gag
Ad34ΔE1gagΔE4Ad5Orf6, 10^11 vp	Ad35ΔE1gagΔE4Ad5Orf6, 10^10 vp	00D016	62	433	176	1288
Ad34ΔE1gagΔE4Ad5Orf6, 10^11 vp	Ad35ΔE1gagΔE4Ad5Orf6, 10^10 vp	00D044	136	593	323	1871
Ad34ΔE1gagΔE4Ad5Orf6, 10^11 vp	Ad35ΔE1gagΔE4Ad5Orf6, 10^10 vp	00D064	188	785	292	992

FIG. 33